Vol. VII. FEBRUARY, 1917. No. 2.

FEB 21 1917

AMERICAN JOURNAL of PUBLIC HEALTH

THE JOURNAL OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Edited by
SELSKAR M. GUNN

Infantile Paralysis
A Round Table Discussion

Birth Control
S. Adolphus Knopf, M. D.

Laboratory Diagnosis of Poliomyelitis
Josephine B. Neal, M. D.

Hay-Fever Prevention in the United States
William Sheppegrell, M. D.

Published Monthly at
10 DEPOT STREET, CONCORD, N. H.

Editorial Office
126 Massachusetts Ave., Boston, Mass.

SEE IMPORTANT ANNOUNCEMENT—ADVERTISING PAGE XVIII

Entered as Second Class Matter at the Post Office at Concord, N. H.

PITTSBURGH MODEL

HORIZONTAL AUTOCLAVE

NEW DESIGN FULL NICKEL PLATED

The only Autoclave using foot power for opening and closing the door.

Thus the operator has both hands free to pack the Autoclave or remove the contents, and there is no necessity for touching the unsterile exterior.

The generator is enclosed in the pedestal.

The heat is thereby confined and concentrated where it is needed. This is a valuable feature where gas or electricity is used.

The door is of a greatly improved design.

It has a ground metal-to-metal joint; and in opening, it swings upward on the inside of the Autoclave.

WRITE FOR QUOTATION

Here you can obtain from stock original Thoma-Zeiss and Thoma-Selmatco Haemocytometers, Sahli Haemometers, Gower Haemaglobinometers, and other blood-testing apparatus. What are your needs? Write us, before our stocks are exhausted.

SCIENTIFIC MATERIALS CO.

711-719 Forbes Street Pittsburgh, Pa.

Headquarters for Bacteriological and Chemical Laboratory Apparatus.

American Journal of Public Health
Official Monthly Publication of the American Public Health Association
Vol. VII FEBRUARY, 1917 No. 2

INFANTILE PARALYSIS.

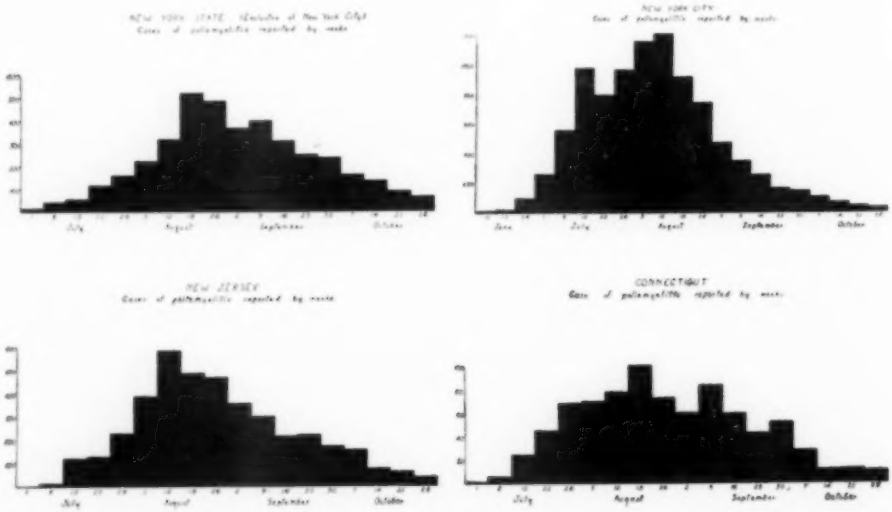
A Round Table Discussion.

At the recent Forty-fourth Annual Meetings of the American Public Health Association, Cincinnati, Ohio, there was held a Round Table Discussion on Infantile Paralysis, in which health authorities throughout the country took part. This discussion was held under the auspices of the Section on Public Health Administration. Dr. George W. Goler, Health Officer of Rochester, N. Y., Chairman of this Section, presided. We take great pleasure in being able to reproduce for readers of the Journal what took place at this most important session.

Prof. C.-E. A. Winslow *of New Haven, Conn.:* Mr. Chairman, ladies and gentlemen: Doctor Goler was, I think, actuated by a certain sardonic humor when he put down for this subject, the *Control* of Communicable Diseases, especially *Infantile Paralysis.* I concluded that I must either talk about the control of contagious diseases or about infantile paralysis, and I concluded that I would select the latter subject, merely taking advantage of the first position on the program to propound a few problems for those who come later to solve, on the principle that a fool can ask many questions that a wise man cannot answer. There are two problems in the main that concern us. I think the first is: Why some people have infantile paralysis? and the second is: Why other people do not? The first question is comparatively easy to answer. I think if one studies the map of the prevalence of disease this summer, such maps, for instance, as these that I will pass around, showing the spread of the disease in the immediate vicinity of New York City and further out from New York City, along the routes of travel, not along the rivers except when they happened to coincide with the routes of travel, only reaching the further points in September,—when you take those results and plot them as has been done here, according to the

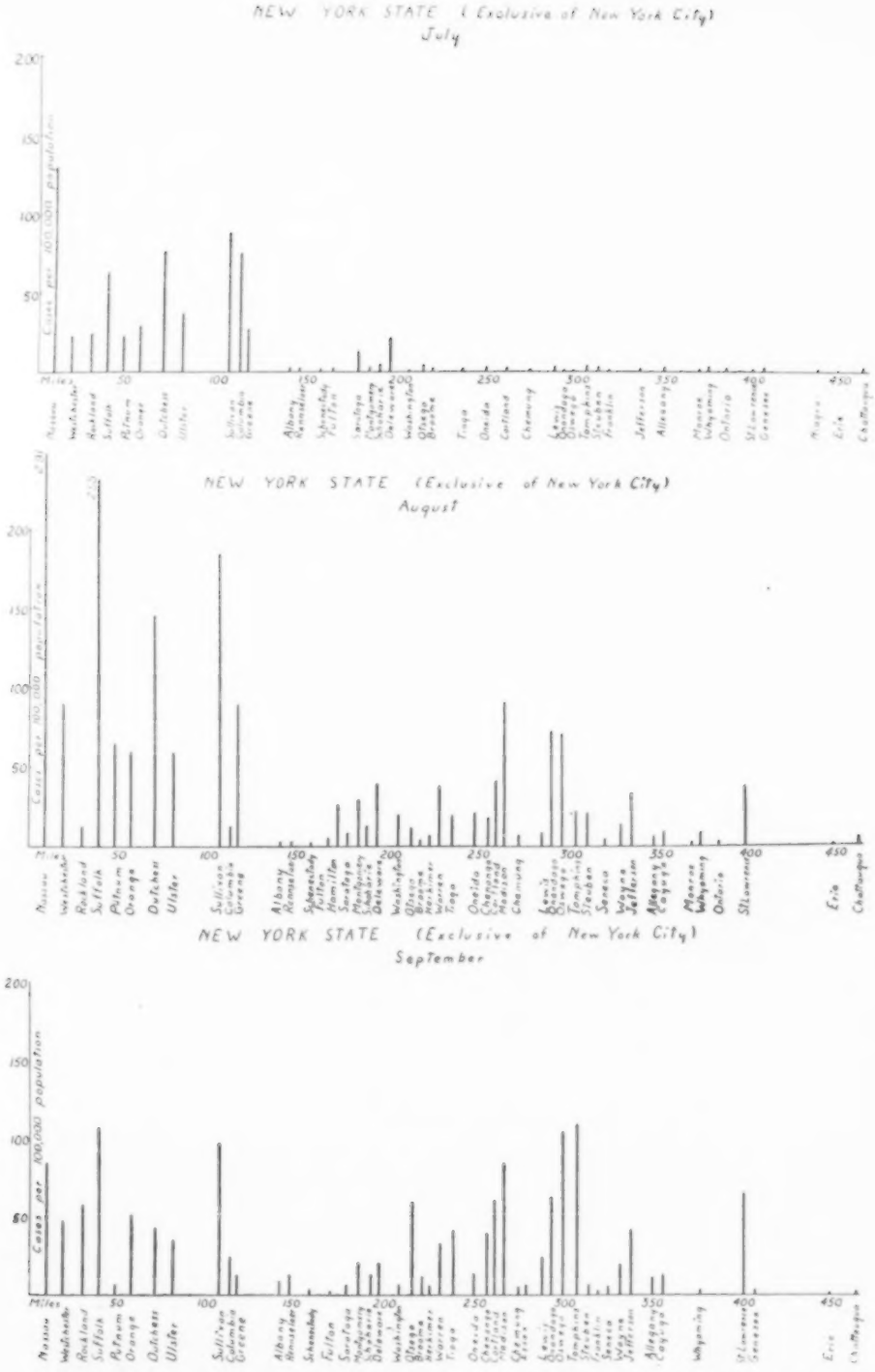
distance in miles from Brooklyn, there is clearly a direct relation, almost a quantitative relation between the case rate and the distance from the original focus. By August the disease is beginning to appear further on, but the relationship still holds. By September the wave has passed to the outlying portions of the area and has left those regions near Brooklyn behind—exactly the phenomenon of every more or less acute contagious disease, spreading in a wave from a center where it started, not preferring the country or the city, as has been claimed in the past. In this outbreak, New York City and Newark had very high prevalences, while in the other states, the country districts showed a slight excess. It seems to me clear that nothing but the communication of a rather virulent virus and communication in the main by human contact can account for any such spread.

Our second question is a much more difficult one. Why is it that only about 1 per cent. of the children in any community get the disease? There are several explanations. One is, that these few are all that are susceptible at that time. This is certainly a part of the truth; yet I do not believe it can be reasonably maintained that every individual in New York City had the germ and every susceptible individual took it. If so, why was there so much more disease in Brooklyn than in Manhattan? Again, the explanation of insusceptibility will not hold with regard to the latter end of these curves. It is true that in New York City the disease fell off a little earlier than in



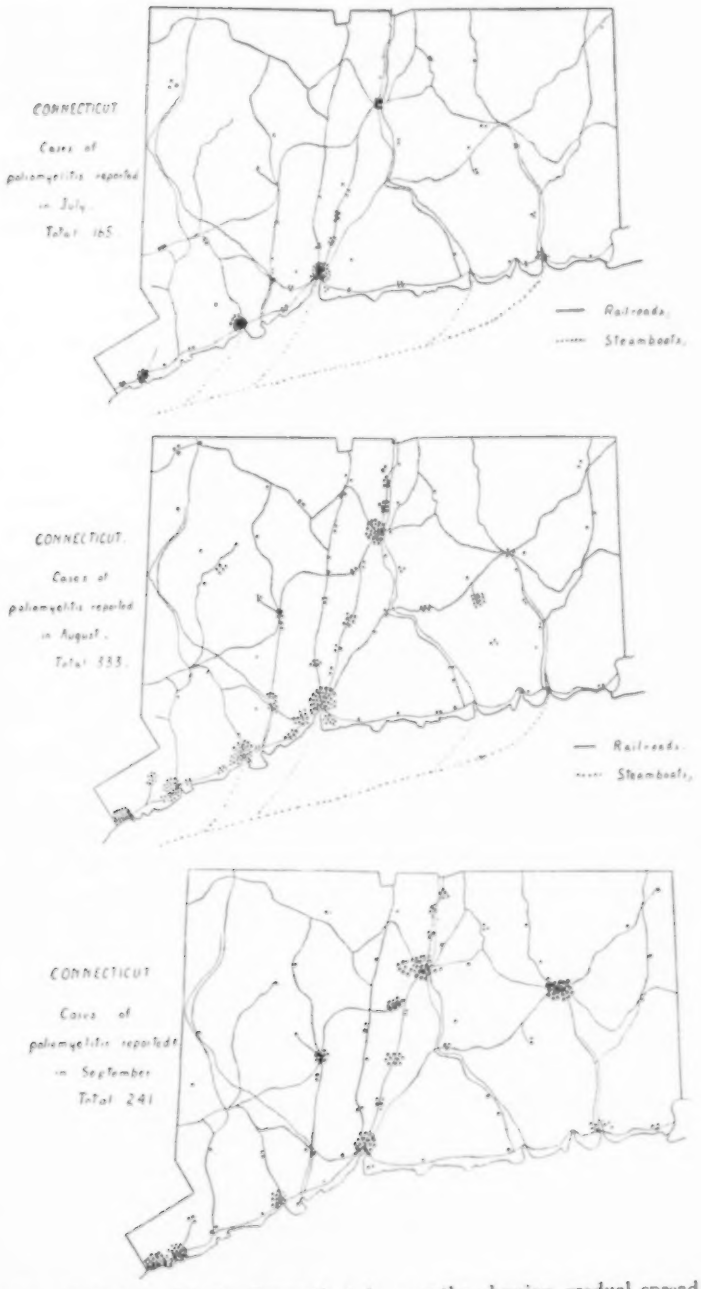
Weekly prevalence of Poliomyelitis in four population groups showing the rapid decrease with onset of cool weather.

Charts prepared by T. G. Hull of the Department of Public Health, American Museum of Natural History, New York.



Relation between incidence of Poliomyelitis by New York counties and distance from Brooklyn, showing gradual spread from original focus and burning out of susceptible material in localities first attacked.

Distribution of Poliomyelitis in New York state by months, showing gradual spread from New York focus along lines of transportation.



Distribution of Poliomyelitis in Connecticut by months, showing gradual spread from New York focus along lines of transportation.

any other places, and I do not doubt that in certain districts of New York all the susceptible individuals had it, but the decrease at the end of the season in the city and in New York State and still more in other states not shown here, like Massachusetts, was certainly not due to the exhaustion of susceptible material but to another phenomenon to which I want to call your attention, the influence of season. It is well known that there have been occasional outbreaks of infantile paralysis in the winter; yet, in general, it is a summer disease. That is the one point I want to lay before you; we all know it, but we do not all take account of it. All the other phenomena of this disease, as far as I know, are explained by direct contact just like that which occurs in any other respiratory disease, coupled with the existence of a large proportion of immunes. What is not explained is the fact of summer prevalence; for all the other nose and throat diseases are winter diseases. I think we ought to remember this one fact which does not fit in with the general scheme of things. Whether it means that the infection is carried by insects, which personally I doubt, or that it is primarily an intestinal infection, or that the germ requires a concurrent intestinal infection, I do not know; one of these three explanations seems to me required to account for the fact of its summer prevalence.

Dr. Frederick L. Hoffman, *of Newark, N. J.:* Chairman, Ladies and Gentlemen: It seems to me that it would have been much better if Professor Winslow had continued his exceedingly interesting and instructive account of his recent research work in infantile paralysis. He has probably given more time and thought to the elementary general questions involved in the strictly scientific study of infantile paralysis, with special references to statistical considerations, than any one else present. The material available for such a study is much more extensive than is assumed to be the case. Unfortunately the statistical data are frequently of doubtful intrinsic value, and far-reaching conclusions are often advanced by those not sufficiently trained in the methods of statistical analysis. There is a serious danger of misleading the public on the one hand and by giving currency to erroneous statistical conclusions through the text-books on infantile paralysis, with most of which I am reasonably familiar, and all of which fall decidedly short as regards an adequate statistical presentation of the facts. The error lies as much in the direction of conclusions from too limited a number of cases as in arguments advanced in the form of a broad generalization based upon a mere collection of heterogeneous data. It seems to me also that the blanks and forms which are being used in connection with the statistical investigation of the recent epidemic fall short of the required consideration of many important matters of detail. The blanks have apparently been prepared with reference rather to a particular point of view than with a due regard to broad

considerations of impartial statistical analysis. Crude statistical investigations are certain to mislead the public and seriously hinder the cause of scientific research. It seems to me, therefore, of the utmost importance that there should be a consensus of qualified expert opinion as to the methods of statistical research in infantile paralysis in much the same manner as there is a consensus of qualified opinion behind methods of medical research. If it were easy to arrive at definite conclusions, it is a safe assumption that the results of past statistical investigations would have been more useful than has actually been the case. Infantile paralysis is, broadly speaking, a new disease and the etiological factors are apparently exceedingly obscure. Elementary statisical considerations, such as age, sex, race, season, etc., are in all probability of minor importance, except in so far that, as a general rule, the average majority of the cases and deaths occur during the first five years of life. Even this statement is open to the objection that in some epidemics (in Scandinavia) the majority of the cases and deaths have been among adults. Unquestionably, however, an extended statistical analysis of the experience which has thus far been had in epidemics of infantile paralysis throughout the world, would aid materially in behalf of an effort to arrive at some safe and sane conclusions regarding the extensive epidemic of the present year. It is sincerely to be hoped, therefore, that those who have official charge of the data, whether federal, state, or municipal, will approach the problem of statistical analysis with a due consideration of the extreme complexity of the problem so that the best results may be secured, and that some new light may be forthcoming regarding this lamentable affliction of childhood, which in its ultimate effects has proved a most serious physical and economic burden to the people of this country.

Dr. Charles Bolduan *of New York City:* When the disease first made its appearance in the city, two courses were open to the Department of Health; we could either have kept quiet about it and tried to control it by the ordinary measures (notification, isolation and quarantine), or we could give the matter wide publicity and seek in that way to accomplish a number of things, impossible to attain under the other plans. Thus through publicity we could hope to discover practically all of the cases, a matter of the utmost importance in the control of all epidemics. Besides this, and equally important, we could hope to educate the people so that they might observe the precautions which seemed to be indicated. The result has amply vindicated the publicity method followed by the Department of Health of the City of New York.

Let me call your attention to just one phase of our experience. In the beginning of the year, as perhaps a great many of you know, New York City experienced an epidemic of a grip-like infection which caused at least two thousand deaths that we had not counted on. Added to this we have the present outbreak of poliomyelitis which has caused even more than two thou-

sand deaths which were unexpected. Despite these four thousand unexpected deaths in New York City this year, our death-rate thus far is as low as it was last year, and last year New York City had the lowest death-rate in its history. An analysis of the death returns shows that the four thousand unexpected deaths have been compensated by a diminished rate, during the past summer, of deaths from *preventable diseases*. This fact is very significant and shows that something has been at work to give us that favorable result.

To my mind, we see here the effect of public health education. Never before has the city been so thoroughly cleaned up. The city authorities were very active; the streets were flushed daily, garbage and rubbish were promptly collected, tenements were inspected, additional medical inspectors and nurses were provided, hospital and ambulance facilities extended and funds placed at the disposal of the health authorities. All of this had the hearty support of the people of the city, support gained almost entirely as the result of the publicity campaign carried on by the Department of Health.

The people themselves did their share, and willingly obeyed the orders and suggestions of the authorities. The children have never before been so carefully watched over by their parents; never before have the parents been so mindful of the proper care of food and drink; never before have homes been kept so clean.

In closing I desire to say a word about the work of the newspapers of this city. Although we employed all the various methods of spreading our educational publicity — newspapers, leaflets, illustrated lectures, noonday talks, movies and other kinds of devices—it seems to me that the main credit for the good showing to which I have alluded, belongs to the newspapers. They have given us unqualified support, and devoted enormous space to our bulletins. For this invaluable help they deserve our public acknowledgment and thanks.

While it is extremely doubtful that the publicity had any direct effect on the course of the epidemic, there can be no question as to the enormous indirect value of the educational campaign thus carried on. The result reminds one of the old German fable of the dying vintner who told his sons of the treasure buried in the vineyard. Spading and raking every foot of the vineyard without finding the gold they thought was buried there, and about to conclude that their father had been mistaken, they were rewarded by an unusually bountiful yield of the vineyard. This, then, was the treasure, the reward for their careful cultivation of the vineyard.

Dr. Charles V. Craster, *of Newark, N. J.:* The City of Newark, N. J. is in the favorable position of being next to the largest city in the United States. On this occasion, with regard to poliomyelitis, we had not much satisfaction in having that position so clearly related. The question of the possibility of poliomyelitis spreading from New York to Newark was one which had been in our minds since

the time that the disease became epidemic in that city in the latter part of June. I think there are quite a number of us who did not quite believe the statement of Wickman as to the probability of this disease being of a communicable nature; I think now, however, that since our recent visitation we have come considerably to believe that Wickman was right after all. We had our first case of poliomyelitis of the epidemic type in the first week in July. This was the time at which it had become very prevalent through all the Boroughs of New York City. What brought home to us the fact that this epidemic form had arrived in the City of Newark was that the case was fatal within twenty-four hours. We had had of the endemic type of the disease, previous to that, 102 cases in six years, with only one death, so that we were quite sure that the virulent Brooklyn variety had arrived on the third day of July. It is interesting to refer to the conditions found in this first case, although I do not want to say that it has any bearing upon the communicability of the disease. Upon investigation it was found that the father of this child, which was, by the way a nursing baby, was an express driver who carried goods between Newark and Brooklyn and New York, and brought goods back again from Brooklyn to Newark. The family of this man had never been in Brooklyn or New York City and he had had no visitors at all from that locality. The family consisted of six children, I think. The nursing baby was the first attacked. The disease rapidly spread to the various other wards of the city so that in three months we had 1,360 cases, and 363 deaths. The ward in which the first case appeared was one in which there was quite a polyglot community of Italians, Poles, Hebrews, and a smattering of Germans. These people carried on the business of junk dealers and small storekeepers and there were some small factories in the locality. The cases rapidly spread from the tenth ward, where it originated, into the third ward, and there is something interesting about this, because, talking about sanitary precautions, the third ward in the City of Newark was one in which we had taken special pains to clean up three months previously. I should say that the third ward at that time was possibly one of our cleanest wards, amongst those in which the population is congested and there are present many varieties of racial and religious practices and ways of living. Yet we had the greatest incidence of disease in that ward and the greatest number of deaths. I would say that we had 972 cases treated in the two hospitals in the county hospital, and in the city hospital. In these hospitals very many children suffering from other diseases were treated and yet we had not a single case where we could say an infection occurred from an infected to a well child.

Dr. Louis I. Dublin, *of New York City:* In investigating the etiology of an obscure disease, workers often get useful suggestions from its analogies to other and better known diseases.

It may be of value, therefore, to point out some of the resemblances which the epidemiology of poliomyelitis bears to that of other diseases of childhood. The periodicity in the epidemics of poliomyelitis recalls that of scarlet fever. The disease is not epidemic every year; it is only fairly prevalent for a number of years and then suddenly reappears in epidemic form. The similarity to scarlet fever, cannot be carried too far.

The varying virulence of the disease suggests the history of smallpox in America. For a period of years smallpox will be prevalent over wide areas of the country in decidedly non-virulent form; the lethal rate may be as low as .1 per cent. Then suddenly a focus of infection may develop where the lethal rate will be as high as 35 per cent. You will recall epidemics of this sort in Michigan and in Florida, a few years ago. Something like this is true for poliomyelitis this year unless our earlier figures for this disease are entirely untrustworthy. Previous records indicate a lethal rate of about 10 per cent. During this year's epidemic, the lethal rate varied slightly in different communities but averaged more than 20 per cent. In Newark, N. J., and in New York City, the lethality was as high as 27 per cent. For a while, the figures for the state, exclusive of New York City, seemed to be running much lower, but the corrected figures show a rate similar to that of the city. This makes the picture a little more consistent, since the cases in both the city and the rest of the state started from the same focus, attacked the same ages of the community, and received about the same kind of medical care.

Another interesting analogy with the infectious diseases of childhood is the fact that poliomyelitis shows a consistently higher mortality among males than among females. The New York City figures for this summer's epidemic show that 58.1 per cent. of the deaths were of males and 41. 8 per cent. of females. In Newark there was an even greater preponderance of the deaths among male children; 61.2 per cent. as against 38.8 per cent. for females. Here the lethal rates exhibit the same difference, being 28.1 per cent. for males and only 24.7 per cent. for females.

Poliomyelitis is again similar to other childhood diseases, such as measles, scarlet fever and diphtheria in regard to its incidence by color. There seems to be a high degree of immunity among colored children to all of these infections. Whether or not this is because poliomyelitis has not as yet been prevalent in those sections of the country where there are extensive colored populations, we cannot definitely say. But, for the first three months of New York City's epidemic, the proportion of colored cases was almost negligible—22 of the total of 1,922.

I did not know the significance of these similarities between poliomyelitis and infectious diseases of childhood. They may suggest a line of approach in the researches of the laboratory worker and of the epidemiologist which may help to clear up some of the obscurities of this disease.

DR. HAVEN EMERSON, *of New York City:* We should say that we have accomplished one or two very definite things; we have accomplished the teaching of physicians, the practitioners of medicine, that this is a general disease which may express itself without paralysis; otherwise we should not have had 15 per cent. of all our cases showing no paralysis at any time. We have accomplished this change in the public state of mind, that whereas, in the beginning of the epidemic, the Department of Health was sued by people because we took children from them to hospitals for isolation, we have, during the last weeks of the epidemic, been sued because we did not take children from people's homes and put them into hospitals. That is a result of the psychological treatment of the community by public education, we believe. We should say that we have, to our own satisfaction locally arrived at the conclusion that environment, so far as it is ordinarily understood, in the form of civic cleanliness, in the maintenance of standards of upkeep of premises, has no obvious or necessary causal relationship to the spread of the disease. Our reason for so believing is that the disease has been common in places which would score A on sanitary environment, and there has been no case on Barren Island, in the City of New York. Barren Island is a community isolated by water from the Borough of Brooklyn, but within the confines of the Borough, where there are 1,700 people and about 500 children, in a place with no water supply except shallow wells, no sewage disposal, no garbage collection, and the presence on that Island of all the city garbage brought there for rendering, all the dead animals of the city brought there for reducing to their ultimate end products and no protection against flies, insects or other carriers of any kind; the most unpromising and insanitary conditions to be found within the limits of the city prevail on Barren Island and always have. That place is socially and geographically isolated and has not been cleaned up. Governor's Island has been isolated by the Federal authorities. We believe that the segregation of children under such conditions of care as prevail in well regulated institutions for children is sufficient to prevent the spread of disease to those institutions from the community or in those institutions among the inmates when it occurs among the children. We had ten cases supposed to have occurred in institutions for children among 30,000 such children in the City of New York. Of those, all but four occurred in institutions which received children direct from the tenements, kept them a couple of weeks and returned them, so those cases may be set aside as not being under the control maintained in permanent homes for children. There were four cases occurring in institutions that had children for permanent residence; all four occurred within three weeks of the time of our putting the quarantine upon those institutions. The infection might conceivably have occurred before we shut those institu-

tions off from contact with the rest of the community. We did prevent the entrance of adults and children as visitors to those institutions from the first of July. Three of those cases developed in one institution in which they took the children out each day to play in Prospect Park, and in that same institution visitors broke in through the rear door for the sake of seeing their children after the quarantine was established. Those four cases in those two institutions of all the 100 institutions for children in the City of New York, are the only instances of the occurrence of this disease in a fixed child population of 21,000 children, and the only measure of protection was their isolation from contact with the rest of the general community; there was no protection by precautions concerning water, milk, foods or general screening against insects of any kind. We felt in the beginning of this epidemic that just as soon as we got reports of the first handful of cases with a high death-rate, we owed as much or more to our neighbors whom we could not protect as we did to ourselves, whatever methods of protection we wished to put into force; that was why the first act of the Department was to notify the health officers of adjacent states, and the surgeon general of the Public Health Service and get as wide a knowledge of the existing and threatening epidemic as possible through the official channels of public health administrators. When that was done we had to say "We do not know how we can protect ourselves; we are equally powerless in attempting to protect you and we must expect you to take whatever precautions you wish against us. We cannot immobilize the traffic or the business of the City of New York."

Dr. Allen W. Freeman, *United States Public Health Service:* With reference to the question of humility in the study of poliomyelitis, I do not think there is any disease which leads so much to an humble and contrite frame of mind as does poliomyelitis. I do not think you will find any one of the very many men who were engaged in the study of the disease in New York this summer who will lay claim to knowing any single fact about the disease other than the fact that it did prevail.

I do not know whether my friend Doctor Hoffman was referring to me in his remarks or not, but as I happen to be in custody of a considerable body of the statistical matter on the epidemic, I want to assure Doctor Hoffman that these statistics will be compiled with such honesty as we know, and we trust with as much honesty as if they were compiled in an insurance office.

Now as to the fundamental principles underlying the study of poliomyelitis, there is very little regarding which we can speak with certainty. It seems to me that the fundamental truth which it is most important to determine at this time is, Where is the reservoir from which the virus of poliomyelitis comes?

Any one who studies the disease is at once struck with the fact that the spread of the disease over any considerable territory is accomplished in

a comparatively short space of time. In the states about New York during the past summer, while the epidemic began in New York City about the 15th of June, it began in New Jersey about the 24th of June, and reached its crest only a week later than in New York City. New York State reached its crest just a week later than New Jersey, and Connecticut the same week as New York State. In studying the incidence of the disease in a neighborhood or community also, the cases tend very markedly to appear almost simultaneously, and the disease passes over in a very short period of time. The appearance of the disease in the city of Bridgeport, for example, was very striking, in that practically every part of the city was invaded at once.

Such facts as these, and they will be found to be quite general in their application, lead one to believe that he is dealing not with the links in a chain of infection, but with the outcropping of some very extensive and general underlying reservoir of infection, of which the paralyzed case represents only the peak of virulence.

The fact of prime importance at this time, therefore, is to locate this reservoir of infection. Once the reservoir is located, the means of transmission will be comparatively easy to determine. If this reservoir is in man, the means of transmission are limited to a few possibilities, if in some animal in association with man, to a few others, and if, as may be entirely possible, in some now altogether unsuspected place, to a single possibility.

Any one working with poliomyelitis must be struck with the indications pointing to the intestinal origin of the infection. The prevalence of the disease reminds one strikingly of the prevalence of so-called contact typhoid.

To my mind, therefore, the most important problem in poliomyelitis, and the one on which all other work must wait, is the definite and positive determination by laboratory means, of the location of the reservoir of infection.

Dr. W. H. Frost, *United States Public Health Service, Cincinnati:* Doctor Freeman has undertaken to show the necessity for assuming a huge reservoir of infection of poliomyelitis and raised the pertinent question whether or not this is a human reservoir. I think the answer comes primarily from the experimental evidence which all points to an exclusively human reservoir, to the idea that this is an exclusively human disease. An idea was advanced some years ago by the first man who ever studied this disease broadly, that it is not rare but a wide-spread infection only occasionally manifesting itself in paralytic cases. Without undertaking to argue to that conclusion, I merely want to present the observations upon which the hypothesis is based, which are these; First, that we have and have had for many years evidences of the endemic occurrence of poliomyelitis over a wide-spread area, the cases showing no apparent connection one with the other. The second is the fact, now well established, that poliomyelitis is not necessarily a paralytic disease. We

frequently see cases which can be diagnosed with great care, but which would undoubtedly be overlooked except in the presence of an epidemic. We next note the phenomenon of self-limitation of epidemics. We see an epidemic sharply decline in a community where only one out of a thousand are attacked. This is difficult to account for on any idea except that the infection has burnt itself out. We have also noticed in several instances, an apparent immunity of areas which had suffered from previous epidemics. This was noted in Sweden in 1905 and 1911; also this year in the United States. Then, again, the age distribution of cases, their limitation largely to children is significant. Certain other infectious diseases, notably measles, are largely limited to children, not because they are essentially children's diseases, but because the adult population has been more or less immunized. Then we have the fact that epidemics characteristically reach a higher rate of prevalence in rural than in metropolitan communities, and farther, a very striking fact, not sufficiently emphasized, that the rural cases tend to an entirely different age distribution from the metropolitan cases. Studies of statistics of such epidemics as are now available show that in rural epidemics, especially those in Iowa and Minnesota, a much larger proportion of cases have been in the higher age groups than has been the case in the epidemics occurring in large cities. I present this idea, not as a conclusion, but as a suggestion which deserves a far broader study than has been yet possible to make. Doctor Hoffman has justly said that our statistics up to this time are extremely deficient; we have records of only a few thousand cases prior to this year; this year we have records of over 20,000 cases, which should afford us a much broader statistical basis. In this connection I may say that in undertaking to draw conclusions from analogy, we are very often handicapped by the lack of parallel data, carefully worked out, regarding our most common infectious diseases of better established etiology, so that we often assume concerning them certain epidemiologic features which statistical analysis would not necessarily show to be true and are thus led to false analogies.

Dr. John S. Fulton, *of Baltimore:* About fifteen years ago I wrote a paper entitled "Quarantine; the Delirium Ferox of American Hygiene." Under the name *delirium ferox*, the older writers described a psychosis, sometimes occurring during the initial fever of smallpox; a violent insanity, dangerous to the victim and to life and property about him. Being free and unembarrassed by practical knowledge of quarantine and its psychosis, I spoke disrespectfully of these antiquities. In 1916 I have suffered retribution. Quarantine and its psychosis have overtaken me.

Up to 1916, we in this latitude knew nothing whatever about interstate quarantine except what we could learn from accounts of its practice in the Gulf States during epidemics of yellow fever. It was a procedure beginning

as a kind of gentlemanly espionage by the health officials of several states over the sanitary affairs of other states, concentrating presently in one city, where a fine punctilio was exercised in asking and answering questions about yellow fever, and eventuating in quite vigorous hostilities when epidemic conditions were at last manifest.

We used to think that such things could not occur in our cooler ranges of the North Temperate Zone. But in 1916 we did no better than our Southern brothers. Our "manners had not that repose which marks the caste of Vere de Vere," but we got there just the same.

When I first heard that Maryland would be involved in a state-wide quarantine, I made the news welcome. Up to that time the quarantines had simply spread from town to town, incoherent, contradictory, chaotic quarantines of every grade. But with state-wide quarantine, I thought we might have an experience massive enough to determine the disappearance forever of such a procedure. And so about the 5th of August, when I learned that all Maryland had been quarantined against, I became somewhat exhilarated.

My period of exhilaration was extremely brief. I had no idea what was impending. I was stone blind to what should have been perfectly obvious. There had been fewer than twenty cases in all Maryland up to that time. We had been certifying a good many people for travel to other states; most of them Marylanders, not afraid to go with their children to their usual summer quarters farther north. But now we began to certify people in great numbers, and in all parts of the state. We ticketed the traveling public with the evidence that their journey began in a quarantined state. These printed and signed official acknowledgments were in view at railway stations and wharves, and health offices were besieged by applicants for these inculpating documents, necessary to travelers.

Now imagine, if you can, a health authority managing a great spectacle of disaster, and at the same time giving comfortable assurances to the people. The people did not discredit us on either hand. They believed in the spectacle and in the figures too. They were not concerned with the actual numbers, but with the significance of the numbers. Whether the cases of poliomyelitis were tens, hundreds or thousands, they meant that we were on the verge, or in the grip, of epidemic poliomyelitis. We had no maniacal panic, but a widespread misinformed and very embarrassing fear. We began to pattern our actions, slavishly, on bad models. Our Baltimore outbreak was measured by days, quite as if we had a huge population like that of Greater New York. One morning a newspaper came out with the headline, "Only One Case, The End in Sight." Next morning, the headline said, "Three New Cases, Hope is Crushed." During several weeks our official behavior was pretty much like that of the more excited states. Trains and boats were inspected. We dispossessed travelers of their certificates and permits. We allowed the opening

of the public schools to be delayed, and went beyond necessity in several other matters. We did not command our situation. We were largely dispossessed of command, partly by the unreasonable and, to my mind, absurd requirements of quarantining states, partly by the popular counsel within our own border.

There was not a single point, of importance to an executive health officer, secured by the interstate quarantine, which could not have been better, more cheaply, and more speedily secured by the simple notification which was given by the United States Public Health Service from New York City and Baltimore to all parts of the United States. Interstate quarantine as exemplified in 1916 against poliomyelitis was not a helpful but a disabling procedure. From our 1916 experience one benefit ought to result; the relegation of interstate and interurban quarantine to the medieval limbo out of which it came.

ROBERT N. HOYT, *of Manchester, N. H.:* The city or state which wishes to control poliomyelitis may find an authoritative outline of methods in a recent number of the *Bulletin* of the United States Public Health Service. For the control of diphtheria, scarlet fever, typhoid fever and other communicable diseases, we have no similar authority. The efficacy of the prescribed rules for poliomyelitis may be doubted. About the value of similar rules for the other diseases named, there can be no doubt. Neither can there be doubt as to the needs of scientific leadership to those who know the backwardness of city and state health departments to apply proved scientific discovery to their regulations. Some cities and states still base release of scarlet fever patients merely on time and desquamation and not on abnormal discharges. Similar unscientific practice in the universal fundamentals are common among the many city and state health departments which are guided by fear of the medical profession, or of the public. The remedy which I propose for this bondage to the superstition and discarded theories of a prescientific age is scientific leadership to be obtained by the report of a committee of experts appointed by the chairman of this section; it is my idea that this committee shall concern itself and report only on the universal fundamentals. I therefore propose the following motion:

That the chairman of the section of public health administration appoint a committee of five to formulate minimum requirements for the control of the common communicable diseases and that this committee be instructed to report at the next meeting of the Association.

Mr. Hoyt's motion was seconded and carried.

DR. F. M. MEADER, *of Albany, N. Y.:* When I said that I would speak on this occasion, it was understood that I was to talk on another subject. There has been one or two suggestions made which I would like to follow up first, that which was made by Professor Winslow, speaking of the seasonal prevalence of the diseases of measles

and scarlet fever. The occurrence of these diseases is greatest in April and March, respectively. The occurrence of diphtheria is greatest in the early part of the year. The greatest appearance is in the last part of the year for typhoid fever. The peak of poliomyelitis has been in September in years past. This year, in our section, it was in August. Now that corresponds with the peak of typhoid fever; that is, typhoid fever, in our section of the country, comes heaviest in August and September. Doctor Freeman pointed out that the infectious agent might be prominent in the intestinal discharges of the poliomyelitis patient. There are a number of men who have been examining this subject carefully and they have the feeling that in this outbreak observation, on the possibility of the infectious agent being distributed by aloine discharges, has been largely neglected.

In regard to quarantine, we have had two very striking examples in New York State; one city of about 100,000 people has had a very rigid system of quarantine; they started by making a house-to-house canvass for all the newcomers in the city; they posted guards at the entrance to the city, at the railway stations and at the trolley entrances of the city, where every trolley car came to the city a policeman entered the car and took off the children and found out where they were going. Every child that entered the city to remain was quarantined for two weeks. The system was carried out in a vigorous manner. A neighboring city with practically the same population did just the reverse. The health officer was on his guard at all times and whenever a contact case or a case was brought to his attention, he segregated it at once, but there was no widespread attempt to control all of the people in the city. At the close of the season, the first city had six cases, and the last city had eight.

Dr. Maurice Ostheimer, *of Philadelphia:* There was one striking difference between New York and Philadelphia, in the small number of cases without paralysis reported in Philadelphia. The Board of Health of Philadelphia passed a stringent regulation that, in the case of every child with infantile paralysis reported, should the child remain at home, all inmates of the house should be quarantined for a period of thirty days. As the natural result of this regulation, very few cases without paralysis were reported. It follows, therefore, that our percentage of abortive cases is a very low one and our whole mortality a very high one. We had, between January 1 and October 23, 1916, the enormous number of 955 cases of anterior poliomyelitis, and those who are able to estimate consider that there were between 200 and 300 more abortive cases never reported because they did not reach the stage of paralysis. We had, out of the 955 cases, 284 deaths, a mortality of 29.7 per cent. The fact that the abortive cases were not considered in this list helps somewhat to explain this high mortality. There are also two other factors of some importance. When a case died with a "suspicious" diagnosis, the physicians being unable to decide

whether the child had infantile paralysis or not, that case was included in our list, so that we undoubtedly have some cases reported as "suspicious deaths" which were not anterior poliomyelitis. Besides, we had a large number of cases of the "bulbar" type, cases which invariably terminated fatally.

There is another thing to add, that, as Philadelphia is in Pennsylvania, we had the benefit of the quarantine regulations imposed by the state of Pennsylvania. On August 4 Doctor Dixon, Commissioner of Health of Pennsylvania, quarantined the State against all children under sixteen years, admitting children from other States only upon the presentation of certificates from the local health boards, from which the children came. As a result of this action, nearby States also declared a quarantine and children were not allowed to leave this State without certificates. Over 200,000 such certificates were written in Philadelphia alone. This quarantine was kept on for sixty days, until October 2, 1916.

Dr. William H. Park, *of New York City:* In the short time allotted, it would seem unwise to repeat what others have said and so I wish to state that all that Doctor Frost and Professor Winslow stated concerning the probability of human carriers and of slightly developed cases being the source of infection, I agree to. Certainly to me, the evidence has appeared as convincing as it did to the two gentlemen who have presented the facts and illustrations.

Those who are not familiar with the difficulties of identifying the organism of poliomyelitis probably wonder why the laboratories have been of so little use in this epidemic except from the diagnostic examination of spinal fluids. In a case of diphtheria, it is very simple to make a throat culture. In the case of cerebro-spinal meningitis, the microscopic examination of the spinal fluid readily reveals the organism and cultures from the nasal pharyngeal mucus membrane usually readily give cultures, so that the existence of carriers can be detected and the duration of isolation controlled. It is entirely different in poliomyelitis. It can hardly be said that the germ has been identified. The one discovered by Noguchi and Flexner is probably the organism, but there is still some doubt. The streptococcus isolated from throats and tissues by Rosenow is still under discussion as to whether it is the same organism as the one previously mentioned, or another. In my opinion, the streptococcus is not the same organism and cultures from the throat cannot be used for detection of carriers or for persistence of the germs in convalescent cases. At present, our only method of detecting the organisms in the sick, the convalescent or the carrier is to inject monkeys with the washings of the infected mucus membranes or with bits of the infected brain or spinal cord. Even in actual cases, the great majority of washings fail to infect, although we know that the organism must be present. It takes a considerable bit of tissue of the brain for the first inoculation. It

seems as though the organism of poliomyelitis was only slightly infectious for monkeys unless it passes through a series of them.

It can be readily seen that laboratories, up to the present time, can be of no help in detection of the individual infected cases and that our experiences, so far, do little more than teach us that the occasional contact person becomes a carrier and that, at least, a few convalescents persist in their infections. It is true that we can deduct from this that many persons are carriers and that many convalescents continue to be infectious for weeks and possibly months. Whether we will be able to get any more accurate information on this point during the epidemic, is doubtful.

Even if we could readily detect the infectious organism, I doubt whether we could do much more at present. When we consider the respiratory diseases, we realize that we control them to only a very slight degree. Pneumococcus infections, diphtheria and cerebro-spinal meningitis, all are spread in spite of our precautions. If only a small proportion of people are susceptible to a disease, but many may become carriers of infection, it becomes an extremely difficult matter to control the spread of disease, because we cannot separate the infected from the uninfected and, up to the present time at least, we are not willing to isolate whole families and communities.

Dr. Mosby G. Perrow, *of Lynchburg, Va.:* In Lynchburg this year eighteen cases of poliomyelitis have been reported, one case in July, four cases in August, ten in September and three in October. The opening of schools was postponed for two weeks, from September 11 to September 25 on account of the scare. All the cases with two exceptions were under five years of age and twelve of the eighteen were under two. The cases were widely scattered and distributed apparently without regard to sanitary conditions. No single family in the city had more than one case nor did any of the 158 contacts quarantined for two weeks ever develop symptoms. We could get no contact history whatever, but two children living fourteen blocks apart were taken sick simultaneously four days after playing together on August 27. A third child living in the country who also played with them on that date was reported a case at the same time, by the county authorities. These could hardly be called contact cases but it would seem that the three got the infection fr m the same source. My own view at present from a limited experience is that the contagion is slight. Were poliomyelitis contagious like measles, or smallpox, or whooping-cough, it would almost certainly have swept the entire city. The opening of schools could have had no effect on the spread as only three cases developed after the opening, and all three of these were children under three years old. If it is spread by contact, it has a rather odd way of proceeding.

Dr. Luther M. Powers, *of Los Angeles, Cal.:* I have nothing to add to this discussion whatever. I wish

I could give my time to someone that knows something about poliomyelitis.

Until 1910 it was not reportable, consequently not quarantined. After that time it was placarded and the same rules of quarantine were enforced as in the case of scarlet fever and diphtheria. The quarantine officers visited the premises to see that the orders were carried out.

In 1912 about 30 miles above the city, in the country, a family was quarantined by the county health officer. There were three cases in that house. Within three weeks, about ten miles from the city, there occurred another case, within the town of Burbank. That was quarantined by the health officer as usual. Some of that family visited another family in a southeasterly direction from the city where they had no quarantine regulations, and no rules were observed in regards to this case. I believe the town of Watts had employed a health officer at one time and paid him $5.00 per month, but discharged him because somebody was dissatisfied. Also the town of Vernon, nearer us still, had no health officer and no regulations were observed. It was an incorporated town and consequently the county health officer did not go in there until I called his attention to the situation. We quarantined three cases on the first visit to this district or town, which did not have over 500 or 1,000 population.

From these two places, Watts and Vernon, the disease crept into the city, and we began to quarantine as usual; that is, we began to placard and our officers visited these houses to enforce our quarantine regulations. The disease rapidly increased. We had in June, 19 cases, and in July the disease increased so rapidly that I found it necessary to go to the then acting mayor and asked him that we have a committee of citizens to cooperate with us because we found there was a certain element in the town that desired to break up any restriction or regulation in regard to this or any other disease. A meeting was called, and ministers, physicians, and various other citizens met with us, and after due consideration an advisory committee was appointed.

We went before the city council and asked for help and the authority to employ guards and physicians; the physicians to inspect from house to house and care for those who were in quarantine; the guards to quarantine the houses during the whole twenty-four hours.

We also started to clean up the alleys and out-of-the-way streets, having the same sprinkled down; and prohibited children under 15 years of age from visiting picture shows, theaters, picnics, or any other crowds.

This action was taken about the beginning of the last week in July. The disease rapidly diminished in the course of ten days; and whether it was due to the strict quarantine or a combination of all the measures, I am unable to say. Anyway, the parties who were willing to fight us prior to that were satisfied they had not accomplished much and were willing to concede that the disease had been brought under control by the methods established.

By the second week in August it had rapidly decreased, and in September we had only 11 cases. In all we had 261 cases and 52 deaths during the epidemic.

In thirteen instances there was more than one frank case in the family, and I know that on more than one occasion, in fact on several occasions, I could directly trace the disease from one party to another where they had been visiting; particularly in the family of a physician who had two cases in his house. He thought he had carried the disease home from making an autopsy. After this doctor reported his children we succeeded in getting a report, through one of our inspectors, of a family which had not reported the instance of the disease, and the children of his family had been visiting the doctor's family a few days before the children were taken sick. The first family had been sick for ten days or more before we received the information.

Notwithstanding the fact that I know you get a very poor history of any contagious disease from parties affected, I desire to state that I have lived in the city and country and have learned that you get more definite and correct information regarding the source of infection from the country districts than the city, for the residents in the country do not communicate with one another so frequently and consequently remember the instances.

Dr. J. F. Anderson, *of New Brunswick, N. J.:* There is just one point I would like to refer to, which, however, has been mentioned incidentally by some of the previous speakers. It has been suggested by some of the speakers that it is necessary to assign some unusual reason why infantile paralysis is largely confined to certain age groups and why such a small proportion of the total population become infected with the disease in such a way as to present clinical evidences thereof.

I have had a fairly large experience with typhus fever, and some with yellow fever, and know that in these two diseases their endemicity is maintained largely by the occurrence of unrecognized cases of the disease among persons of the lower age group in whom these diseases frequently appear in a milder form than in adults. I believe the same thing holds in regard to infantile paralysis, and the fact that the disease appears to be more frequent in certain age groups may be explained by the fact that those in other age groups have become immunized as a result of a slight and previously unrecognized infection.

Dr. Ralph H. Hunt, *of East Orange, N. J.:* We would like to emphasize two points:

First: We believe this to be without question a contagious disease. In our experience it most closely resembled scarlet fever in its epidemiology. The total number of cases observed was 132. Of these there were five instances of two cases in one family, four instances of three cases in one family, and one instance of four cases in one family.

Second: We wish to call attention to the value of the examination of the spinal fluid in the diagnosis. In our

opinion it is the truest indication of the disease where the diagnosis cannot be made by the presence of paralysis, in very many of the cases where the diagnosis was made by lumbar puncture before paralysis, it was later confirmed by the appearance of actual paralysis. It was our rule not to make a diagnosis in doubtful cases without lumbar puncture.

Our total number of spinal fluid examinations totalled seventy.

Average cell count for positive cases, 151.

Average cell count in negative cases, 4.

Albumin and globulin were increased in all positive cases.

A good Fehling. There follows detail cell counts:

Over 10 and under 20, two. Over 20 and under 30, two. Over 40 and under 50, five. Over 50 and under 60, seven. Over 70 and under 80, three. Over 80 and under 90, five. Over 100 and under 200, eighteen. Over 200 and under 300, four. Over 300 and under 400, four. Highest counts: 786, 777, and 582.

Dr. W. L. Holt, *of Maplewood, N. J.:* I think I have a remarkable distribution of my cases in families. Doctor Hunt, of East Orange, mentioned one family where there were three cases in the family, but out of the 18 cases we had in South Orange Township, no less than 9, just half, were plural cases, that is, were not individual cases where there was only one case in the family. I had three families where there were two cases in each family, and one where there were three, so it certainly looked as though it might spread in families.

Dr. Maurice Seymour, *of Winnipeg, Sask.:* In a population between 700,000 and 800,000 we had 65 cases with a mortality of 9; 15 of those cases we were able to trace directly to contact with a case that occurred in North Dakota; in the other cases, we were unable to trace any contact of that nature. These 15 we clearly traced to an individual case in North Dakota that the family had been visiting.

Dr. William H. Park, *of New York:* The chemical and microscopical examinations of the spinal fluid give great help in the doubtful cases, but the findings in themselves never give us the information to make the absolute diagnosis of poliomyelitis, although the microscopical search may rule it out by detecting some specific organism as the meningococcus or the tubercle bacillus. Necessarily, during epidemics, the very great majority of all preparalytic cases presenting suspicious symptoms referable to the nervous system, such as hyperesthesia, altered reflexes, stiffness of the neck, etc., are poliomyelitis. The health officer is fully justified in treating these cases as such while waiting for further information such as the development of paralysis or the confirmatory results of the spinal fluid examination. If this is normal in composition we can almost but not absolutely exclude poliomyelitis. If abnormal we note the chemical and the cell content changes. There is no possibility at present of detecting the specific bac-

teria as in meningococcic and tubercular meningitis. The positive findings, therefore, as previously stated are not pathognomonic. The fluid in a case of poliomyelitis is usually increased in amount and, therefore, escapes from the spinal puncture under pressure. When it is examined in a tube, it is seen to frequently present a ground glass appearance when viewed carefully by transmitted light. This is due to the increased number of cells. This test is not as accurate a measure of the cell increase as the microscopical examination, but is of value at the bedside as helping to separate cases of meningism from the true inflammations. The shaking of the fluid in the tube will usually give a froth due to its increased albuminous content. These two results are not limited to fluids from cases of poliomyelitis as they occur also in some cases of meningococcic and tubercular meningitis having almost clear fluids. If from the spinal puncture a small amount of blood is added to the spinal fluid, a similar condition is obtained. To avoid this the middle portion of the escaping fluid may be examined. In poliomyelitis, there is a more or less marked inflammatory reaction and there is, therefore, a slight to a moderate increase in the cells, the globulin and the albumin.

The cells count is made either by examining the fresh fluid in the glass counting chamber or the centrifuged sediment. The two methods, in our opinion, give similar results. The sediment is also stained for microörganisms. We have not considered the exact number of cells as important, but simply whether the increase was slight, moderate, great or very great. Doctor Neal has not felt that the number of cells has any direct relation to the prognosis although the greatest number of cells are usually found in the most severe cases. We have used in the chemical tests the nitric ring test for albumin, and butyric acid test of Noguchi for globulin. The albumin and globulin amounts always run nearly parallel. The presence of glucose is tested by mixing equal quantities of Fehling's solution and spinal fluid and the reading is made after the lapse of one-half hour. The cells usually show a great preponderance of mononuclears, but in a few instances there is over 50 per cent. of polymorphonuclears. The cells are often so degenerated that it is hard to classify them. The type of cells is of little, if any, prognostic value.

The differential diagnosis in suspected cases is helped by the examination of the spinal fluid as follows:

1. Cases in which the central nervous system is not involved.—The spinal fluid in cases of gastro enteritis is usually normal in appearance, quantity and constituents. In cases of meningism due to pneumonia, etc., the fluid is usually increased in amount, but is otherwise practically normal. Doctor Neal has noticed that in a small percentage of cases of convulsions, and whooping-cough and in some cases just before death there is an increase in the albumin and globulin of the spinal fluid.

2. Cases in which the brain and cord and meninges are involved.—These include rare early cases of epidemic

opinion it is the truest indication of the disease where the diagnosis cannot be made by the presence of paralysis, in very many of the cases where the diagnosis was made by lumbar puncture before paralysis, it was later confirmed by the appearance of actual paralysis. It was our rule not to make a diagnosis in doubtful cases without lumbar puncture.

Our total number of spinal fluid examinations totalled seventy.

Average cell count for positive cases, 151.

Average cell count in negative cases, 4.

Albumin and globulin were increased in all positive cases.

A good Fehling. There follows detail cell counts:

Over 10 and under 20, two. Over 20 and under 30, two. Over 40 and under 50, five. Over 50 and under 60, seven. Over 70 and under 80, three. Over 80 and under 90, five. Over 100 and under 200, eighteen. Over 200 and under 300, four. Over 300 and under 400, four. Highest counts: 786, 777, and 582.

Dr. W. L. Holt, *of Maplewood, N. J.:* I think I have a remarkable distribution of my cases in families. Doctor Hunt, of East Orange, mentioned one family where there were three cases in the family, but out of the 18 cases we had in South Orange Township, no less than 9, just half, were plural cases, that is, were not individual cases where there was only one case in the family. I had three families where there were two cases in each family, and one where there were three, so it certainly looked as though it might spread in families.

Dr. Maurice Seymour, *of Winnipeg, Sask.:* In a population between 700,000 and 800,000 we had 65 cases with a mortality of 9; 15 of those cases we were able to trace directly to contact with a case that occurred in North Dakota; in the other cases, we were unable to trace any contact of that nature. These 15 we clearly traced to an individual case in North Dakota that the family had been visiting.

Dr. William H. Park, *of New York:* The chemical and microscopical examinations of the spinal fluid give great help in the doubtful cases, but the findings in themselves never give us the information to make the absolute diagnosis of poliomyelitis, although the microscopical search may rule it out by detecting some specific organism as the meningococcus or the tubercle bacillus. Necessarily, during epidemics, the very great majority of all preparalytic cases presenting suspicious symptoms referable to the nervous system, such as hyperesthesia, altered reflexes, stiffness of the neck, etc., are poliomyelitis. The health officer is fully justified in treating these cases as such while waiting for further information such as the development of paralysis or the confirmatory results of the spinal fluid examination. If this is normal in composition we can almost but not absolutely exclude poliomyelitis. If abnormal we note the chemical and the cell content changes. There is no possibility at present of detecting the specific bac-

teria as in meningococcic and tubercular meningitis. The positive findings, therefore, as previously stated are not pathognomonic. The fluid in a case of poliomyelitis is usually increased in amount and, therefore, escapes from the spinal puncture under pressure. When it is examined in a tube, it is seen to frequently present a ground glass appearance when viewed carefully by transmitted light. This is due to the increased number of cells. This test is not as accurate a measure of the cell increase as the microscopical examination, but is of value at the bedside as helping to separate cases of meningism from the true inflammations. The shaking of the fluid in the tube will usually give a froth due to its increased albuminous content. These two results are not limited to fluids from cases of poliomyelitis as they occur also in some cases of meningococcic and tubercular meningitis having almost clear fluids. If from the spinal puncture a small amount of blood is added to the spinal fluid, a similar condition is obtained. To avoid this the middle portion of the escaping fluid may be examined. In poliomyelitis, there is a more or less marked inflammatory reaction and there is, therefore, a slight to a moderate increase in the cells, the globulin and the albumin.

The cells count is made either by examining the fresh fluid in the glass counting chamber or the centrifuged sediment. The two methods, in our opinion, give similar results. The sediment is also stained for microörganisms. We have not considered the exact number of cells as important, but simply whether the increase was slight, moderate, great or very great. Doctor Neal has not felt that the number of cells has any direct relation to the prognosis although the greatest number of cells are usually found in the most severe cases. We have used in the chemical tests the nitric ring test for albumin, and butyric acid test of Noguchi for globulin. The albumin and globulin amounts always run nearly parallel. The presence of glucose is tested by mixing equal quantities of Fehling's solution and spinal fluid and the reading is made after the lapse of one-half hour. The cells usually show a great preponderance of mononuclears, but in a few instances there is over 50 per cent. of polymorphonuclears. The cells are often so degenerated that it is hard to classify them. The type of cells is of little, if any, prognostic value.

The differential diagnosis in suspected cases is helped by the examination of the spinal fluid as follows:

1. Cases in which the central nervous system is not involved.—The spinal fluid in cases of gastro enteritis is usually normal in appearance, quantity and constituents. In cases of meningism due to pneumonia, etc., the fluid is usually increased in amount, but is otherwise practically normal. Doctor Neal has noticed that in a small percentage of cases of convulsions, and whooping-cough and in some cases just before death there is an increase in the albumin and globulin of the spinal fluid.

2. Cases in which the brain and cord and meninges are involved.—These include rare early cases of epidemic

and older cases of tubercular meningitis. In cerebro-spinal meningitis even in the first 24 to 48 hours in the exceptional cases in which the fluid is not cloudy and the globulin is not excessive one usually finds meningococci and a great excess of polymorphonuclear leucocytes. In meningitis due to streptococci and pneumococci, the bacteria are usually present on first day and almost always at later periods.

The tubercular meningitis give fluids and contained cells most similar to poliomyelitis. The bacilli can usually be found and the history is usually suggestive. In most cases the globulin and cells are in greater amount and the reduction of Fehling's solution is not as great.

The syphilitic cases are suspected through a positive Wassermann.

Dr. H. L. Amoss, *of New York:* I believe that a differential diagnosis should not be made by merely macroscopic examination of the cerebrospinal fluid. The spinal fluid in very early stages of cerebrospinal meningitis may present the ground glass appearance. Even in an epidemic of poliomyelitis one should always bear in mind the possibility of epidemic meningitis in order that specific treatment may be begun immediately. In an epidemic of over 600 cases of poliomyelitis this summer in Westchester County, New York, I discovered two cases of epidemic meningitis and diagnosis was made tentatively at the bedside by microscopical and chemical examination of the spinal fluid. Specific antimeningitis serum was administered immediately so that in the first case only three doses of serum were necessary and in the second case only two doses were necessary to bring about recovery. The diagnosis was confirmed by centrifuging the fluid and staining the sediment.

I should like to emphasize the importance of examining the spinal fluid immediately after withdrawal. The microscope should be carried to the bedside. In difficult cases the clinician has no right to take the specimen of spinal fluid, send it to the laboratory and expect the bacteriologist to make the diagnosis. Not only may diagnosis by this method be impossible, but valuable time is lost.

The spinal fluid in very early stages of epidemic meningitis may contain only six or eight hundred cells per cubic millimeter and some of them may be lymphocytes. On the other hand the fluid in poliomyelitis may contain at times from twelve hundred to two thousand cells some of which may be polymorphonuclear leucocytes. In the early stages of epidemic meningitis the meningococcus may be present in such small numbers that long search is necessary to reveal them.

In tuberculous meningitis also the spinal fluid may contain a number of lymphocytes well within the zone of possibilities for poliomyelitis. The tubercle bacillus may be exceedingly difficult to find. In one case where the thorough search of a number of slides from three specimens of spinal fluid failed to reveal the tubercle bacillus, animal inoculation was resorted to and by reducing the resistance of the guinea pig through the

influence of Roentgen rays diagnosis was possible in five days.

The test for globulin may be of value in the differentiation of these infections of the central nervous system. A heavy globulin content is more frequent in the fluid withdrawn during the early stages of epidemic and tuberculous meningitis than in the corresponding stage of poliomyelitis.

There are two points in the epidemiology of poliomyelitis which have come out of our experiences in Westchester County:

First, we were able to trace an unusually large number of our cases to contact infection or obtain a history of contact with persons from infected districts;

Second, I am lead to believe that the quarantine period for contacts should be extended to sixteen days at least. We have observed children known to have been in contact with undoubted cases of poliomyelitis and quarantined for two weeks to come down with the disease two days after release. We have evidence which leads us to conclude that adults may transmit the disease to children after the former had come into contact with a case of poliomyelitis.

Third, it appears that a person may be in the communicative stage two days before the apparent onset of poliomyelitis.

Dr. Haven Emerson, *of New York City:* I wish to state that after accepting our cases and following them during the period we considered the infections to persist we found an error of 2 per cent., that is, of 9,000 and odd cases, we have received and observed as poliomyelitis, 2 per cent. were found during the course of the eight weeks' observation to have been either suffering from no illness or to have some other disease than poliomyelitis.

That is the margin of error in our experience as the result of the present combination of clinical observation plus laboratory examination of the spinal fluid.

Prof. C.-E. A. Winslow, *of New Haven, Conn.:* In closing, let me remind you that I approach this subject from the standpoint of the epidemiologist, not having any direct laboratory experience with this disease, but I think it is interesting to see how much epidemiology has to contribute, as shown in the discussion today. I think Mr. Hoffman is right in pointing out that the kind of work done along these lines, as, for instance, by Doctor Frost and Doctor Freeman has much that is material to offer, and in speaking of Mr. Hoffman, I cannot refrain from expressing my appreciation, which I think we all feel, of the service he has rendered by his great book on cancer, and by his statistics of dusty trades and in many other ways; services not demanded of him as a public official, but given freely and generously through public spirit.

Another thing has been very gratifying to me about this discussion—there has been no tendency to stress individual factors as all sufficient explanation; all through the discussion a spirit of open-mindedness has been manifest. The element of contact is of course one dominant feature; at every

turn you are faced with the fact that this is a contagious disease. Two cases have come to my attention this summer along that line, one that of a wealthy man in Connecticut who placed guards all around his place, allowed nobody to leave it, bathed and disinfected himself, and changed his clothes in the garage every night when he came home, yet his child developed infantile paralysis. Somebody suspected the chauffeur, and it was found that he had secretly gone over to Brooklyn to visit his sister and while there had learned that his niece had just come down with the disease. Another case was that of a little outbreak that occurred on a lonely island 12 miles off the coast of Mt. Desert, where it was found that the first cases were in families that had gone out from an epidemic center in Portland. The second factor is susceptibility. I am absolutely in accord with all that Doctor Frost has said about the human reservoirs and the great importance of the unsuspected carrier, and I would like to remind you of the similarity between the condition here and in cerebrospinal meningitis. The third factor that we are quite certain affects the course of the disease is this other factor of season. This effect is not direct, it does not show day by day. We have plotted the cases in New York according to the temperature and humidity, and there is no rise as in infant mortality with an individual hot day; in fact, the one striking deviation in this curve is a drop in infant paralysis in the latter half of July, which was the most hot and humid period during the whole summer. On the whole, however, this is clearly a hot weather disease, a fact which distinguishes it from the ordinary nose and throat contact infections, all of them being winter diseases. Such a fact would fit in with insect transmission or with some form of food infection or with transmission which required an intestinal disturbance as a contributory factor. I have read Doctor Richardson's paper on rat and flea transmission and I think it is well worthy of careful study, but I am still less convinced than ever that there is an insect host here. I believe the line suggested today which is worthy of most serious attention at present as a working hypothesis is that there is an intestinal factor. That does not mean that the disease is spread by food epidemics; it means one of two things, either, as Doctor Park has suggested, that there is a contact food infection, the germ not living in the food for any length of time but being spread by contact first and then by food carrying the immediately soiled material into the intestinal tract, or that there is another factor entirely separate from the germ; the germ of infantile paralysis perhaps entering through the nose and throat and spreading by contact infection, but some other intestinal process being necessary to lower the vital resistance and let it get in.

A word in closing as to the practical method of control—I was greatly interested in what Doctor Ostheimer said about the Philadelphia regulations. That is a splendid example of the fact that over-severe regulations

defeat their own end. It is better to have reasonable regulations and enforce them. I think we have good reason to congratulate ourselves on the general spirit that has been shown. Looking back a few years—I was in the 1909 epidemic, in a village where about 20 families lived on a little country road in the salt marshes. A light case developed, then a little further up the road a case that died, then another case in the same family, then another still nearer and the day after that was reported every one of us fled in panic. Bad as things have been this year, it has not been as bad as that; we are getting ahead and if we keep cool and continue to accumulate data in the spirit shown today, I look for success very soon.

CROSS INFECTIONS IN FEVER HOSPITALS.

Dr. John Robertson, M.O.H., records an experiment of some importance in hospital administration made at the Lodge Road Hospital, Birmingham, during the year 1915. For a number of years suspicion attached to the cups, plates, knives, forks, and spoons used by the patients, of conveying infection from patient to patient, as they are all interchangeable. From June 1, 1914, to May 31, 1915, all crockery, etc., was sterilized after use by the patient. Observations were made on this incidence of other infections in 1,388 cases in the scarlet fever wards before the process of sterilization was inaugurated, and on 537 after it was commenced. Similarly, 334 cases of diphtheria were recorded before and 1,145 cases after disinfection, a total of 3,434 patients. The results tabulated below show that so far as scarlet fever and chicken-pox infection are concerned this sterilization was of distinct value.

I.—IN SCARLET FEVER WARDS.

	Before 1st June, 1912–31st May, 1913, 1,388 cases.		*After* 1st June, 1914–31st May, 1915, 537 cases.	
	Number.	%.	Number.	%.
No signs and remained free from scarlet fever	115	8.3	43	8.0
No signs and contracted scarlet fever	17	14.8	0	
Contracted chicken-pox	14	1.0	1	0.18
Contracted diphtheria	4	0.28	11	2.05
Contracted measles	3	0.20	4	0.75
Contracted any infection (total)	38	2.7	16	2.9

II.—IN DIPHTHERIA WARDS.

	Before 16th Oct., 1912–14th June, 1913, 344 cases.		*After* 1st July, 1914–30th June, 1915, 1,145 cases.	
	Number.	%.	Number.	%.
Contracted scarlet fever	11	3.2	17	1.5
Contracted measles	8	2.3	5	0.4
Contracted chicken-pox	1	0.3	10	0.8
Contracted any infection (total)	20	5.8	32	2.8

—*Medical Officer*, London, January 13, 1917.

THE LABORATORY DIAGNOSIS OF POLIOMYELITIS.

JOSEPHINE B. NEAL, A. B., M. D.,
Chief, Meningitis Division, Bureau of Laboratories, Department of Health, New York City.

Read before the Laboratory Section, American Public Health Association, Cincinnati, Ohio, October 26, 1916.

THE Meningitis Division of the Department of Health was established six years ago in order to afford to the physicians of the city of New York expert assistance in the diagnosis and treatment of meningitis. Since 1910 we have held consultations in nearly 1,600 cases, presenting a great variety of meningeal conditions. These have included tuberculous meningitis, purulent meningitis of all kinds (meningococcic, pneumococcic, streptococcic, influenzal, staphylococcic); meningism in a variety of diseases, especially pneumonia, gastro-enteritis and other acute infections in children; many rarer conditions, such as brain abscess, brain tumor, syringomyelia, etc.; and over 500 cases of poliomyelitis, alone, 70 of which occurred before the incidence of the recent epidemic. During the epidemic, doubtful cases have been reported to us for diagnosis. As our work in the past had consisted in a careful clinical study of the cases, combined with various laboratory procedures, especially the examination of the spinal fluid, which we withdrew if the conditions seemed to warrant it, we had had experience that was particularly valuable to us in diagnosing these doubtful cases, for there is no purely "laboratory diagnosis" of poliomyelitis during the life of the patient though the laboratory aid in doubtful cases is indispensable. The development of experimental poliomyelitis in a monkey inoculated with an emulsion of the brain and cord of a patient who has died of the disease, makes the diagnosis. But if a monkey develops poliomyelitis after being inoculated with the washings of the nose and throat of a case, without the history and clinical findings, one cannot be sure that it is not a carrier rather than a true case. Moreover, on account of the varying susceptibility of monkeys and the small amount of virus present in the nose and throat washings, such a large number of negative results are obtained that the method would be unsuitable for routine diagnosis, even if it were not so expensive and did not take so long for results to develop.

These objections apply also to the neutralization test. This test consists in incubating a mixture of blood serum from a suspected case with a known active virus. This mixture is inoculated intracerebrally in one monkey and the virus alone in a control. The presence of antibodies in the serum is demonstrated if the control monkey becomes infected while the other monkey does not. A further objection to this method lies in the fact that the serum of many people known not to have had a recent attack of poliomyelitis shows the presence of antibodies. Other blood examinations

are of little or no value. The count shows, as a rule, a leucocytosis and a polynucleosis, which is true of most infections with which poliomyelitis may be confounded. The complement fixation has so far been unsuccessful.

The examination of the urine has no diagnostic importance so far as is known at present. At first, it shows the characteristics of an acute febrile condition, later in the paralyzed cases, the end reaction of the products of muscle degeneration. Clinically, it should be noted that in the severe cases there is often a retention of urine, in the very severe cases occasionally a suppression.

The examination of the spinal fluid is the most valuable laboratory aid in the diagnosis of poliomyelitis, but even here, there are no pathognomonic findings, as for example, the infecting organism in a purulent or a tuberculous meningitis. It is by ruling out other conditions that it is of value and it is of the greatest service only when correlated with a careful clinical study of the case. (Of course no diagnosis is easier clinically than that of poliomyelitis with a frank flaccid paralysis, but few diagnoses are more difficult, clinically, than the non-paralytic and atypical cases, which are so important from the standpoint of epidemiology.)

During the recent epidemic, we have examined over 1,800 fluids from both the paralyzed and non-paralyzed cases, nearly 500 of these being from cases which we had seen in their homes.

The data from this material has not yet been entirely arranged as certain facts relating to our own cases have not been collected and there is yet considerable work to be done in studying the cytology of smears from the centrifuged fluids. Not wishing to give incomplete data nor to burden you with unnecessary details, I will give the more general facts and conclusions from the data that I have studied.

The spinal fluid in poliomyelitis is usually increased in amount and escapes under pressure. It is clear or slightly hazy in appearance and sometimes shows the febrin web formation which was formerly considered pathognomonic of tuberculous meningitis. Recently, attention has been called to the "ground glass" appearance (or a slight haziness seen in the fluid when viewed by strong transmitted light) as being of help in diagnosing poliomyelitis fluid. This appearance is found in the fluids containing the larger number of cells. When the cells are fewer, I, personally, should hesitate to say from the macroscopic appearance whether or not the cells are increased. Moreover, this appearance is also seen in the fluids of tuberculous meningitis, in early purulent meningitides with a slight cellular reaction and in normal fluids where there is a small amount of blood present. In view of these facts, the "ground glass" appearance is of little more significance than the increased quantity. If a bed side examination of the fluid is necessary, one should go with the proper equipment to make a fairly reliable examination.

In poliomyelitis, the spinal fluid shows evidence of an inflammatory reaction—there is a varying increase in

the cells and in the albumin and globulin. In a few cases these evidences of an inflammatory reaction are well marked; in most cases they are moderate; while in a few cases, at the other extreme, they are so slight and the fluid so nearly approaches normal that it is difficult to make a definite statement in regard to the findings. The reduction of Fehling's in these fluids is practically always as prompt as in normal fluids.

The technic which we employ in examining spinal fluids is as follows:

All clear or slightly cloudy fluids are centrifuged for an hour at high speed. From the sediment, spreads are made, taking care to use as nearly as possible, the same area on the different slides. The sediments of clear fluids are stained by the Ziehl-Nielsen method for the tubercle bacillus—the sediments of slightly cloudy fluids for both the tubercle bacillus and by the Gram method. Smears from the poliomyelitis fluids were also made for special blood stains in order to study the cells. This work has not been completed. From this stained sediment, we can estimate the increase in cells as slight, moderate, great, or very great. We do not feel that the exact number of cells has more than an academic interest. The cell count in poliomyelitis and tuberculous meningitis, while on the average higher in the latter, overlaps for so wide a range as to render the differential diagnosis by this point most unreliable. Moreover, while some claims to the contrary have been made, it is not our impression that the number of cells in poliomyelitis fluids bear any relation to the prognosis of the case. We have made a fair number of cell counts in connection with the work and we find that, on the whole, the two methods check up fairly well. From these stained sediments we also estimate the percentage of mononuclears and polymorphonuclears and note the presence of endotheliod and polyform cells. The presence or absence of bacteria is also noted. Cultures are made from all specimens. In the case of uncontaminated poliomyelitis fluids, they have been uniformly negative.

The chemical tests that we use are the nitric acid ring test for albumin and the Noguchi butyric acid test for globulin. The albumin and globulin practically always run parallel, but they serve as a check on each other. The small amount of albumin and globulin present in normal fluids is marked ±. The signs, +, +!, ++, +++, ++++, represent increasing amounts and serve as a rough quantitative estimation. The presence of glucose is tested by using an equal amount of Fehling's solution and spinal fluid and it is marked with regard to the speed and the amount of reduction as −, ±, +, ++, +++. The globulin reaction and the reduction of Fehling's should not be read for at least half an hour.

Taking up these points somewhat in detail, let us first consider the cytology. The increase in cells varies very greatly both in different cases and in the stage at which the puncture is done. Our counts have varied from slightly above normal, 15–20 to 350–400. The counts tend to fall off after the first week and

by the end of the second week have fallen to practically normal in nearly all cases.

The cells usually show a preponderance of mononuclears but in a few instances there is over 50 per cent. of polymorphonuclears. It has been stated that early in the disease there was an excess of polymorphonuclears, which later was replaced by mononuclears. In the large number of early fluids that we have examined on the second, third, and fourth days, the polymorphonuclears—out of a special series of about 400 fluids in only 3 cases, occurring on the third, fourth, and fifth days respectively. We feel, therefore, that the polymorphonuclears represent a special type of reaction—and is not characteristic of a stage of the disease. Often, even in fresh fluids, the cells are so degenerated that it is difficult to classify them. There are large mononuclear cells that seem to be endotheliod in type that seem to us to occur more frequently in poliomyelitis than in other conditions. The so-called polyform cells are also found. We hope to study the various types of cells more carefully a little later.

The albumin and globulin are usually slightly to moderately increased. In 141 fluids, 99 were marked + or + 1; 36, + + or + + 1; 5, + + +; and 1, + + + +. The increase in albumin and globulin persists after the cell count has returned to normal.

Fehling's, as has been stated before, is practically always well reduced. The fluids that show a poorer reduction are usually those with the larger amount of albumin and globulin.

We will now consider the differential diagnosis of poliomyelitis fluids.

The slightly cloudy fluids must be differentiated from those of early cases of purulent meningitis and from the slightly cloudy fluid that occasionally occurs in tuberculous meningitis. The clear or practically clear fluids, from rare early cases of a purulent meningitis, tuberculous meningitis, syphilis of the central nervous system, especially acute syphilitic meningitis, and meningism. Other rarer conditions might be mentioned, but these are the most important.

In early cases of purulent meningitis, the spinal fluid shows a varying degree of cloudiness, except in very rare instances, when it may be clear. A greater increase in albumin and globulin is usually found here than occurs in poliomyelitis, with a poorer reduction of Fehling's solution. The cells in these fluids of purulent meningitis are 90 per cent. or more polymorphonuclears, and the etiological organism is always found except in the mildest cases. In certain mild cases of meningitis—probably of the epidemic variety—the meningococci may never be positively demonstrated in the fluid. In purulent meningitis, due to other organisms, these practically always appear later. In one instance only, we have seen a clear fluid from an early case of epidemic meningitis of about eighteen hours' standing. Although the cellular reaction was so slight, the meningococcus was demonstrated to be present in the fluid by smear and culture.

The fluid in tuberculous meningitis most nearly resembles that of polio-

myelitis. It is practically always clear with a cellular increase consisting largely of mononuclears, though in very acute cases it may be distinctly cloudy with an excess of polymorphonuclears. Fortunately, in these cases, the tubercle bacillus is usually easy to demonstrate. The number of cells per cubic millimeter is usually greater than in poliomyelitis; the increase in albumin and globulin is more marked, and the reduction of Fehling's is not so good.

In rare instances when clinical signs are confusing and when the results of the cellular examination and chemical analysis are indefinite, and it is impossible to demonstrate the tubercle bacillus in the fluid, a positive diagnosis must wait upon the results of animal inoculation.

The fluid of an acute syphilitic meningitis closely resembles the fluid of a poliomyelitis, and the clinical signs are also confusing. The Wassermann reaction is the best method of differentiating the two conditions.

Of course, a positive Wassermann would not rule out a poliomyelitis in an old syphilitic condition, but this, combined with the clinical condition and the progress of the case, makes one reasonably sure of the diagnosis. It was suggested at first that the products of degeneration present in the spinal fluid of poliomyelitis cases might give a non-specific Wassermann reaction. Repeated tests have proved this not true.

The fluid of meningism is clear, increased in amount and practically always normal in character. The few exceptions to this that we have found in a large series of cases have fallen mainly into three groups: fluids from cases with prolonged and severe convulsions; fluids in severe whooping-cough; and fluids removed just prior to death. In these cases there have sometimes occurred an increase in cells, or in albumin and globulin or in both. In convulsions, there is probably oedema, in whooping-cough minute hemorrhages, and just before death circulatory changes to account for it.

Lange's colloidal gold test has been used to some extent by workers to whom we have given specimens of fluid and it would seem that it may be helpful in differentiating the fluids of poliomyelitis from those of tuberculous meningitis and from the fluids of meningism which are not normal in character.

Two rare types of spinal fluids sometimes occur in poliomyelitis when the hemorrhagic process has been more than usually severe. The first of these is of the true hemorrhagic character, the red blood cells being evenly diffused throughout the field. When collected in successive tubes the specimens are all homogenous, showing no change in the intensity of the hemorrhage. This serves to differentiate it from bloody fluids obtained by the accidental puncture of a vein.

Evidence of an older hemorrhage occurs in the second of these rarer fluids, which, having a characteristic yellow color and coagulating spontaneously, illustrates the so-called syndrome of Froin. These fluids occur in other conditions, and are, therefore, not pathognomonic of poliomyelitis.

During the past four months, we have done some quantitative work on the chemistry of the poliomyelitis fluids using the micro-chemical methods. This work will be published in detail later. In brief, I may state that it has been found that the *total nitrogen* runs 20–30 mgms. per 100 cc.

Of this total nitrogen about one-half is non-protein and about one-fourth is urea.

Creatinin—.5 mgm. in 100 cc. fluid.

Creatin—.3 mgm. in 100 cc. fluid.

Sugar is slightly lower than in the blood—.05 per cent.–.08 per cent.

All show traces of cholesterol.

In conclusion, I wish to state again that there is no specific laboratory diagnosis of poliomyelitis during life though the laboratory findings are of the greatest possible aid; that physicians can most successfully diagnose the doubtful cases who have had the most experience with the clinical study of meningeal conditions of all kinds, correlated with the laboratory study of the spinal fluids.

THE HEALTH BULLETIN.

The health officer has ever had a variety of duties. What with controlling foci of infection, inspecting suspected food, and offensive privies, protecting water supplies, draining swamps, and determining the fate of sundry noisy and sleep disturbing fowls of a neighborhood, he has had enough to keep him thinking and acting. Recently, however, he has had thrust upon him the business of editor, and often author, of a weekly or monthly publication in the interests of public and private health. Though presumably unprepared for such a service the health officer has risen to the occasion remarkably well.

The issuance of a bulletin was not a new thing for the health department, for a statement of the number of cases of this and that disease and the number of deaths, the number of diagnostic tests made, and a summary of other work, had often been published. But the new bulletin deals with matters of life and health rather than disease and death—in a word, with prophylaxis. The statistics, which we fear were seldom scanned, occupy the background in this new literary venture.

In its present (though we doubt its final) stage of evolution, the health bulletin is often an amphibious affair, intended for both the profession and the public, and for this and other reasons, appealing less than it might, to either. The material intended for physicians is often of a nature perplexing to the laity. In fact we have seen such material so poorly worded or badly edited that the medical reader himself was sorely puzzled as to its meaning. In other cases members of the health staff, excellent in their special lines of bacteriological or other work, have put things in a way which has thrown doubt upon their efficacy. Careful editing would have prevented such a misfortune.

On the "popular" side the health bulletin has too often accepted the usual notion that in order to appeal to the public, one must highly color, or in other words, a little, if not considerably, exaggerate the facts. If this is the key to the lay mind, the earlier the key is lost the better. But the layman is not so stupid. You can fool him some of the time but not always, and exaggerations always react upon their source.

When it comes to sensational methods in health education the health bulletin cannot hold a candle to the advertisers of curealls, for they not only have the literary cleverness, but they have the financial backing. Their reading matter is not sent "to those who desire it" but is spread broadcast and reaches a hundred homes where the health bulletin reaches one. The competition is most one sided, but truth and dignity will prevail even over lies. The kingdom of health, like that kingdom of heaven of which it is an essential part, is like a grain of mustard seed and will surely grow and increase. Let us avoid doing anything that will delay that growth. The health bulletin is an aid toward furthering the kingdom, but let it be worthy of its cause.—Editorial, *New York Medical Journal*, January 27, 1917.

Editorial Section

Selskar M. Gunn, Editor
A. D. Hiller, Assistant
Prescott W. MacNeill, Business Manager

Editorial Assistants

A. W. Hedrich W. H. Coon, M. D. Arthur Lederer, M. D.

Board of Advisory Editors

Dr. Peter H. Bryce, Ottawa, Canada. Dr. Livingston Farrand, Boulder, Col.
Dr. Charles V. Chapin, Providence, R. I. Prof. George C. Whipple, Cambridge, Mass.
Dr. William C. Woodward, Washington, D. C.

All expressions of opinions and all statements of supposed facts are published on the authority of the writer over whose signature they appear and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association

NOTICE TO SUBSCRIBERS

SUBSCRIPTION PRICE, $3.00 a year, in advance, to any point in the United States or its possessions. Foreign Countries, 50 cents extra for postage. Canada, 25 cents extra for postage. Single copies, 30 cents.

ADVERTISEMENTS accepted only from reliable firms. Fraudulent and misleading advertisements barred.

IN CHANGES OF ADDRESS both the old and new addresses must be given.

RENEWAL BILLS are sent one month in advance. Prompt attention to them prevents discontinuance from the mailing list. Magazines are not sent beyond the subscription period.

As the MAILING LIST for each month's issue closes on the first of that month, changes of address, renewals, subscriptions, etc., must reach us before that date to be effective with that issue.

COPYRIGHT, 1916, by Selskar M. Gunn.

THE REGISTRATION AREA FOR BIRTHS.

The recent establishment by the Director of the Census of a registration area for births is one of the big steps of progress which mark our civilization.

This area for 1916 included the six New England States, New York, Pennsylvania, Michigan, Minnesota, Maryland, and the District of Columbia, or 32.4 per cent. of the population of the United States.

Other states will be admitted as soon as they register 90 per cent. of their births. In view of the great interest everywhere in the welfare of children the growth of this area should be rapid. Indeed, in a few years it should include the entire United States. Then the children of our land will be able to prove their ages whether the knowledge be necessary to enter school, to go to work, or to prove rights to inheritance. Then it will be possible annually to measure and compare the birth-rates in all parts of the United States. Then it will be possible annually to measure and compare the infant mortality-rates in all parts of the United States. Then, if the infant mortality-rates are found to be higher in one region than in another, if they are found to be higher among certain classes of our population, or among certain race stocks, the reasons therefor will be promptly sought and discovered, and more definite plans made to save the babies.

This is looking a bit into the future, but only to the logical conclusion of the recent establishment of the registration area for births. Now is the time to push this work so auspiciously begun. Now is the time for every parent to insist that the rights of his child be safeguarded by a proper birth entry in the official records. Now is the time for every state to test the completeness of its birth registration. Now is the time for every state to find out why 90 per cent. of its births are not

recorded. Now is the time for the state legislatures to enact better registration laws where needed. May all, therefore, quickly realize that the Nation needs every state in this registration area.

THE HEALTH INFORMATION BUREAU.

During the latter part of 1916 the Association established its Health Information Bureau. This service is available to all subscribers of the JOURNAL, and is free. By the establishment of such a service, it was felt that there could be placed more directly at the disposal of the subscribers the many advantages the Association enjoys because of its unique position in the field of public health. The creation of this service is in accordance with the newer policy of the Association to extend its usefulness.

Among the twoscore questions received so far, we are reproducing several which we trust will not only describe the scope of this service, but, too, will serve, shall we say, as a stimulant and produce a greater activity between this Bureau and the subscribers.

A superintendent of health asks for a method to obtain pure drinking water for a small consolidated school, newly built, in a locality where the water is unfit for use.

A national organization asks where information can be obtained relative to the per capita health expenditure of Massachusetts towns.

A health officer of a southern city requests the names of all cities issuing weekly or monthly bulletins on health.

The same health officer asks for a list of books dealing with sanitary inspection of establishments where foodstuffs are manufactured, sold or handled.

An epidemiologist is desirous of knowing what dry heat temperatures are necessary to kill body lice and their nits.

An industrial hygiene expert requests information relative to the most recent literature on ozone and ozonators.

A health officer desires information relative to a special inside toilet. In this connection we have received numerous inquiries relative to privies and toilets.

A number of requests have been received for information concerning health exhibits and health motion picture films.

To be sure a wide field is covered, but in creating this service it was realized that the field was broad and our resources capable of meeting all ordinary demands. If this Bureau can be of the slightest aid to you, we trust that you will feel disposed to make full use of it.

BIRTH CONTROL IN ITS MEDICAL, SOCIAL, ECONOMIC, AND MORAL ASPECTS*

S. Adolphus Knopf, M. D.,

Professor of Medicine, Department of Phthisiotherapy, at the New York Post-Graduate Medical School and Hospital; Visiting Physician to the Riverside Hospital-Sanatorium for the Consumptive Poor of the Health Department of the City of New York.

WHEN at this very moment across the sea in Europe the best blood of the nations which were heretofore considered the most enlightened, cultured, and civilized, is daily being shed and hundreds of thousands of young men in the prime of life sacrificed to the Moloch of war, it must seem a hazardous undertaking to talk of birth control, which means artificial birth limitation and by some superficial observers is designated as race suicide. I trust, however, that before I arrive at the end of my paper, I will have convinced you that the object of my appeal is not a plea for reducing the population but for increasing its vigor by reducing the number of the physically, mentally, and morally unfit and adding to the number of physically strong, mentally sound, and higher morally developed men and women.

In accordance with the program outlined, I will deal first with the medical and sanitary aspects of the subject. No one will deny that we occasionally come across a family, well-to-do and intelligent, where the parents by reason of unusual vigor, and particularly by reason of the physical strength of the mother, have been able to rear a large number of children. In some instances all have survived and have grown up to be healthy and vigorous. But these instances are rare and are becoming more and more so every day. On the other hand, large families, that is to say, numerous children as the issue of one couple, among the ignorant, the poor, the underfed and badly housed, the tuberculous, the degenerate, the alcoholic, the vicious, and even the mentally defective, is an everyday spectacle. It is well known to every general practitioner whose field of activity lies among the poor and the above mentioned classes, that the infant mortality among these is very great. The same holds true of the mortality of school children coming from large families among these classes of the population.

Concerning tuberculosis, with which, by reason of many years' experience, I am perhaps more familiar than with other medical and social diseases, let me relate the interesting fact that a carefully taken history of many, many cases has revealed to me that with surprising regularity the tuber-

*This address was first delivered at the 44th Annual Meeting of the American Public Health Association in Cincinnati, O., October 27, 1916. It was again delivered upon invitation on subsequent dates before the East New York Medical Society, the New York Woman's City Club, and the Social Service League of the Unitarian Church of the Messiah.

culous individual, when he or she comes from a large family, is one of the later born children—the fifth, sixth, seventh, eighth, ninth, etc. The explanation for this phenomenon is obvious. When parents are older, and particularly when the mother is worn out by frequent pregnancies and often weakened because obliged to work in mill, factory, or workshop up to the very day of confinement, the child will come into the world with lessened vitality, its main inheritance being a physiological poverty. This systemic poverty will leave it less resistant, not only to tuberculosis but to all other diseases of infancy and childhood as well.

The morbidity and mortality among these children is greatest when the children are most numerous in one family. Miss Emma Duke, in the third of the Infant Mortality Series, gives the result of a field study in Johnstown, Pa., based on the births of one calendar year (1911). The inspection was made in 1913, of the 1911 babies, so that even the last born baby included had reached its first birthday—or rather has had a chance to reach its first birthday; many of them were dead long before that day. The following is Miss Duke's table showing the infant mortality rate for all children born by married mothers in Johnstown during that year:

Deaths per 1,000 births in	
Families of 1 and 2 children	108.5
Families of 3 and 4 children	126.0
Families of 5 and 6 children	152.8
Families of 7 and 8 children	176.4
Families of 9 and more children	191.9

Dr. Alice Hamilton of the Memorial Institute for Infectious Diseases, Hull House, Chicago, made a study of 1,600 families in the neighborhood of the settlement. The following is the table of the child mortality rate of the 1,600 families as published by Doctor Hamilton:*

Deaths per 1,000 births in	
Families of 4 children and less	118
Families of 6 children	267
Families of 7 children	280
Families of 8 children	291
Families of 9 children and more	303

Many families were found of thirteen, fourteen, and even sixteen members. The largest of all was that of an Italian woman who had born twenty-two and raised two. The small families of every nationality had a lower mortality rate than the large families of the same nationality. The Jewish families of four and less had the astonishingly low mortality rate of 81 per 1,000, while in families of eight and less, the rate rose to 260 per 1,000.

The larger the family, the more congested will be the quarters they live in and the more unsanitary will be the environment. Last, but not least, with the increase of the family there is by no means a corresponding increase of the earning capacity of the father or mother, and as a result malnutrition and insufficient clothing enter as factors to predispose to tuberculosis or cause an already existing latent tuberculosis to become active.

What is the result of this condition in relation to tuberculosis—one single disease? Out of the 200,000 individ-

* Bulletin of the Amer. Acad. of Med., May, 1910, and Miss Mary Alden Hopkins in *Harper's Weekly*.

uals who die annually of tuberculosis in the United States, 50,000 are children. Of the economic loss resulting from these early deaths I will speak later on, but in continuing along the medical and sanitary lines of my subject, I must call your attention to the fact that according to some authors 65 per cent. of women afflicted with tuberculosis, even when afflicted only in the relatively early and curable stages, die as a result of pregnancy which could have been avoided and their lives been saved had they but known the means of prevention.* Some times we succeed in saving such a mother by a timely and careful emptying of the uterus. But an abortion even scientifically carried out and only resorted to with the view of saving the life of the mother, is never desirable, either for the consultant to advise, nor for the gynecologist or obstetrician to perform; and who will dare to say that even under the best conditions this operation is devoid of danger.

What is the explanation and what are the consequences from the point of view of sanitation, of the death of 50,000 tuberculous children? They have mostly become infected from tuberculous parents or tuberculous boarders who had to be taken into the family to help pay the rent. In the crowded homes of the poor there was neither sunlight, air, nor food enough to cure the sufferers and before they died they became disseminators of the disease. Nearly all of the infectious and communicable diseases are more prevalent in the congested, overcrowded homes of the poor, and particularly of those with large families. The propagation of syphilis and gonorrhoea by contact infection, other than sexual, can sometimes be avoided in the homes of the well-to-do, by enlightenment and the conscientiousness of the afflicted. They are almost invariably communicated to the innocent in the homes of the ignorant and poor. Gonorrhoeal infection from parent to child or from one infected member of the family to the other, is responsible more than anything else for the 57,272 blind persons in the United States.*

The great syphilographer Fournier left us the following irrefutable statistical evidences of the seriousness of syphilitic transmission. As a result of paternal transmission there is a morbidity of 37.0 per cent., and a mortality of 28.0 per cent.; maternal transmission results in 84.0 per cent. morbidity and 60.0 per cent. mortality; and the combined transmissions are no less than 90.0 per cent. of morbidity and 68.5 per cent. mortality.†

I venture to say right here that would or could a syphilitic or gonorrhoeic parent be taught how to prevent conception during the acute and infectious stages of his or her disease, there would certainly be less inherited syphilis, less blindness from gonorrhoeal infection; in other words, less unfortunate children in this world handicapped for life and a burden to the community.

*C. A. Credi-Hoerder: "Tuberkulose und Mutterschaft." (J. Kraeger, Berlin, 1915.)

*United States Census, 1910.

†Berkowitz: "Late Congenital Syphilis." N. Y. *Medical Journal*, June 17, 1915.

That insanity, idiocy, epilepsy, and alcoholic predisposition are often transmitted from parent to child is now universally admitted, and corroborated by every day experience and by an abundance of statistics. Countless are the millions of dollars expended for the maintenance of these mentally unfit. The State of New York alone spends $2,000,000 annually for the care of its insane. Whether sterilization of these individuals would be the best remedy is a question still open for discussion. The constitutionality of the procedure is doubted by some of our legal authorities. Segregation is resorted to in the meantime with more or less rigor according to the State laws. Every year, however, many of the individuals who had been committed to institutions for the treatment of mental disorders are discharged as cured. They are allowed to procreate their kind. Would it not be an economic saving if at least the individuals whose intelligence has been restored were instructed in the prevention of bringing into the world children who are most likely to be mentally tainted and to become a burden to the community?

The economic loss to our commonwealth from bringing into this world thousands of children mentally and physically crippled for life is beyond calculation. But considering tuberculosis we have been able to calculate at least approximately what it costs. I stated above that 50,000 children die annually from tuberculosis in the United States. Figuring the average length of life of these children to be seven and one-half years and their cost to the community as only $200 per annum, represents a loss of $75,000,000. Such children have died without having been able to give any return to their parents or to the community. Who will dare to calculate in dollars and cents the loss which has accrued to the community because so many mothers died of tuberculosis when an avoidable pregnancy was added to a slight tuberculous ailment in a curable stage? Who will dare to estimate the cost of the loss of an equally large or perhaps larger number of mothers afflicted with serious cardiac or renal diseases, or frail or ill from other causes, whose lives could have been prolonged had an additional pregnancy not aggravated their condition?

Of the many mothers, married and unmarried, who have become chronic invalids and even lost their lives as a result of having resorted to abortive measures in order to rid themselves of an unwelcome child, no statistics are available. If there were, they would be an appalling evidence of the great danger of such criminal procedures and would certainly show the advantage of a more enlightened attitude regarding the means of contraception, at least for the married women who are enfeebled or diseased.

The many diseases I have mentioned whereby children in large families and mothers because of too frequent pregnancies are carried off to an early grave, are not limited to the poor. In regard to economics, the middle class suffers also. Thus, if even a relatively well-to-do family begins to increase out of all proportion to the earnings of the father, the family will soon be in want and approaching poverty. Less

and less good food, less sanitary housing, less care of the children, and more sickness will almost inevitably result. Every sickness or death of child or adult has increased the expenses of the family. There is the doctor's bill, the druggist's bill, and last but not least, that of the undertaker. A grave had to be purchased. If there have been savings, they are gradually swallowed up and debts are often contracted for the sake of a decent funeral.

Next to the medical and sanitary comes the physiological aspect of birth control, which can be summarized in a very few sentences. The average mother with two, three, or four children, not having arrived in too rapid succession, say with two or three years intervening, is physiologically, that is to say physically and mentally, stronger and better equipped to cope with life's problems than the worn out and weakened mother whose life is shortened by frequent and numerous pregnancies.

What is the physiological effect of voluntary artificial restriction of the birth-rate? In Holland, where the medical and legal professions have openly approved and helped to extend artificial restriction of the birth-rate, the health of the people at large, as shown by its general death-rate, has improved faster than in any other country in the world. At the recent Eugenics Congress it was stated that the stature of the Dutch people was increasing more rapidly than that of any other country—the increase being no less than four inches within the last fifty years. According to the Official Statistical Year Book of the Netherlands, the proportion of young men drawn for the army over 5 ft. 7 in. in height has increased from 24½ to 47½ per cent. since 1865, while the proportion below 5 ft. 2½ in. in height has fallen from 25 per cent. to under 8 per cent.*

In that enlightened country, the teaching by the medical profession of the most hygienic methods of birth limitation has enabled the poor to have small families which they could raise to be physically and morally better equipped than formerly. What is most interesting to observe, however, is that, whether as a result of this or for some other reason, the families among the well-to-do are not nearly as small as in other countries.

In Australia and New Zealand, the means of artificial restriction are in free circulation and the restriction of families is almost universal. Yet these two English colonies have furnished to their mother country in these hours of struggle the most efficient, and physically and mentally best equipped regiments. The soldiers of Australia and New Zealand have shown themselves brave and fearless fighters and certainly equal, if not superior, as far as physical endurance is concerned, to their English brethren. In the latter country, it is well known birth control is frowned upon by the legal and nearly all the ecclesiastical authorities.

And what of France? Before the present war Drysdale, in his "Small Family System," very aptly says: "It has become the fashion to speak of the

* "The Small Family System; Is It Injurious or Immoral?" By Dr. C. V. Drysdale; Publ. by B. W. Huebsch, New York.

depravity of France, of her alcoholism, of her disregard for law and order, and of her terrible 'crimes passionels,' and to ascribe to them the falling birth rate. If this were the case it is obvious that these evils would be most intense where the process had gone furthest, *i. e.*, in the cantons of the lowest birth rate (The French islands of Ré and Oleron)." The passions of the inhabitants of these islands are very innocent. "They are reading and dancing. The dancing, always decent, is the preparation for marriage; illegitimate births are very rare. One could not imagine manners more pleasant or more honorable. Nevertheless the birth rate in these islands is among the lowest. It it because everyone there is more or less of a proprietor. Each person has some property to protect; each is ambitious for his children." But we have the authority of Doctor Bertillon, the great French statistician, that it is just in the cantons of these islands in which the greatest moral improvement has taken place, and that where the French have obeyed the command to increase and multiply, there alcoholism and crime abound.

Let me quote briefly from an editorial on contraception which appeared in the *Medical Times* of April, 1916: "France today is presenting her splendid spectacle of utter efficiency to the world because only the fittest of her people have survived, and the chief factor there has admittedly been contraception. Surely we have heard the last of the croakers about decadent France. Holland would give an equally good account of herself if the need should arise and for the same reason."

We have already touched in part on the economic cost growing into the millions which accrues annually to the nation because of a high birth-rate concomitant with a high infant and child mortality rate. Well may we ask the question whether disease and the deaths of thousands of women and children can not be prevented by an enlightened attitude toward the question of birth control. Why is it not done? If the millions of dollars expended uselessly reverted to the nation's wealth, would they not add immeasurably to the health and economic happiness of the nation at large?

And now we come to the social or sociological aspect of our topic, so closely interwoven with economics. That the social and moral life of a smaller family, where the father earns enough to support wife and children and where the mother can devote her time to the care of them, and where neither she nor the children must go out and help in the support of the family, is superior to that of a family with a large number of children where the mother and often the older children must slave, does not permit discussion. The larger the family of the poor the more child labor, the more there is disruption and irregularity, and the more frequently one finds a lower standard of life and morals in general.

The records of our charities and benevolent societies amply prove that as a rule the larger the families are that apply for relief the greater is their distress.

In answer to a letter from Doctor Foote, containing suggestions on this topic, the president of the New York Association for Improving the Condition of the Poor very pertinently said:

"The race suicide theory which has been so much exploited of late, is an immense encouragement to the large family idea and the illiterate are hardly to be blamed if they are misled upon this question. The subject that you discuss is one that is worthy of serious consideration and that has in the past been treated with an excess of sentiment."

That judicious birth control does not mean race suicide, but on the contrary race preservation, may best be shown from the reports from Holland. The average birth-rate in the three principal cities of Holland was 37.7 per 1,000 in 1881, when birth control clinics were started. In 1912 it had fallen to 25.3 per 1,000. The general death-rate, however, had dropped in the same period from 24.2 to 11.1 per 1,000, or to less than half, while the two-thirds reduction in the mortality of children under one year of age —from 209 to 70 per 1,000 living births —is even more significant. (*Birth Control News*, published by Birth Control League of Ohio, Cleveland, Vol. I, No. 1.)

As a final evidence of the social and economic value of imparting information concerning family limitation, permit me to quote from a personal letter to me from the great pioneer of this humanitarian movement, Dr. J. Rutgers, the Honorable Secretary of the Neo-Malthusian League of The Hague. The league has been in existence since 1888 and received its legal sanction by a royal decree January 30, 1895. It has 6,000 contributing members; all information is given gratuitously. As a result of this league in Holland one does not see any more children dressed in rags as in former years prior to the starting of this movement. To use the venerable secretary's own words: "All children you now see are suitably dressed, they look now as neat as formerly only the children of the village clergyman did. In the families of the laborers there is now a better personal and general hygiene, a finer moral and intellectual development. All this has become possible by limitation in the number of children in these families. It may be that now and then this preventive teaching has caused illicit intercourse, but on the whole morality is now on a much higher level and mercenary prostitution with its demoralizing consequences and propagation of contagious diseases is on the decline. The best test (the only possible mathematical test) of our moral, physiological, and financial progress, is the constant increase in longevity of our population. In 1890 to 1899 it was 46.20; in 1900 to 1909 it was 51 years. Such rise cannot be equalled in any other country except in Scandinavia where birth limitation was preached long before it was in Holland. None of the dreadful consequences anticipated by the advocates of clericalism, militarism, and conservatism have occurred. In spite of our low birth-rate the population in our country is rising faster than ever before, simply because it is concomitant with a greater

economic improvement and better child hygiene."

To verify these figures statistically, Doctor Rutgers refers to Drysdale's diagrams.* The good doctor closes his splendid letter by saying: "One must have been a family physician for twenty-five years like myself in a large city (Rotterdam) to appreciate the blessings of conscious motherhood resulting in the better care of children, the higher moral standard. And all these blessings are taken away from you by your government's peculiar laws, made to please the Puritans."

To these latter well-meaning people and those similarly minded who fear race suicide, particularly a decline of the American stock, I strongly recommend the reading of that splendid address by Professor Charles A. S. Reed, A. M., M. D., former president of the American Medical Association, entitled "The American Family." In the chapter on "The Outlook of the American Family" he very pertinently says: "We see in a declining birth-rate only a natural and evolutional adjustment of race to environment—an adjustment that insures rather than menaces the perpetuation of our kind under favoring conditions." And concerning under-population in general, this distinguished writer says in the same address: "It seems, indeed, to the careful student that the danger to the American family today and still more in the future lies in the direction of overpopulation rather than under-population."

According to Mulhall and Reed, the increase in the density of population from 1820 to 1890 was 650 per cent. in the United States (only 25 per cent. in the United Kingdom and less than 100 per cent. in France and Belgium). The rate of increase in this country has been vastly accelerated in the twenty-five years that have since elapsed. Our population today of over 100,000,000 has been doubling itself on an average of once in less than twenty-five years since 1790, and it will probably continue to do so in the future. May I say in passing, that in the State of New York we have observed the alarming phenomenon that the proportional increase among the insane is double that among the sane population?

And now I approach the last and most important phase of my subject, namely the moral, which to me means no less than the religious phase of this great problem. Let me say to you, my colleagues, that I approach it with awe and reverence, for I believe I fully understand the import of it.

A quarter of a century of practice among the tuberculous, the rich and the poor, in palatial homes, humble cottages, dark and dreary tenements, and in overcrowded hospitals, has shown me enough to bring to my mind the utter immorality of thoughtless procreation, and my experience has been limited to this one disease of the masses. The tears and sufferings I have witnessed when I have had to decline help because it was too late to prevent the despair of the poor, frail

*"Diagrams of International Vital Statistics With Description in English and Esperanto, together with a Table of Correlation Coefficients Between Birth and Death-rates, etc." By C. V. Drysdale, D. Sc.; London: Wm. Bell, 162 Drury Lane, W.C., 1912.

mother at the prospect of another inevitable confinement, and later the sight of a puny babe destined to disease, poverty, and misery, has made me take the stand I am taking today. I am doing it after profound reflection, and I am fully aware of the opposition I am bound to meet. But in my early career as an antituberculosis crusader, I became accustomed to the fate of those who venture on new and heretofore untrodden paths of progress.

What would the moral outcome of birth control, or let us rather say, rational family limitation be, if taught judiciously to those seeking and needing the advice? Millions of unborn children would be saved by contraception from the curse of handicapped existence as members of a family struggling with poverty or disease.

There are hundreds of young men and women, physically and morally strong, who gladly would enter wedlock if they knew that they could restrict their family to such an extent as to raise few children well. But their fear of a large family retards, if it does not prevent, their happiness and *ipso facto* the procreation of a better and stronger manhood and womanhood. The woman withers away in sorrowful maidenhood and the man whose sexual instincts are often so strong that he cannot refrain, seeks relief in association with the unfortunate and often diseased sisters, called prostitutes. The result is a propagation of venereal diseases with all its dire consequences. To an audience composed of physicians and sanitarians I need not say what these consequences are. They involve sterility, physical and mental suffering in the man, or sterility in both man and woman; and according to the severity of the infection, abortion, premature labor, a dead child, or one lastingly tainted with disease.

At times disease does not enter as a factor in the tragedy, but the result is a girl mother, a blasted life, for our double standard of morality recognizes only the "sin" in our sisters, not in ourselves. Of her, compassionate tongues only say she loved not wisely but too well; of him, nothing is said at all. He is spotless and virtuous in the eyes of the world and can go through life as if he had never sinned and been responsible for a blasted life or two.

Even our moralists must acknowledge that by an early marriage with a man of her choice, enabled by understanding to limit the number of children, many a girl would be saved from so called dishonor and in many instances from prostitution. One of the strongest arguments of our moralists and purists is that the knowledge of contraception would lead the young to enter forbidden sexual relations and degrade them morally. Granted that this may happen in a number of instances, the benefit derived from a diminution of venereal diseases, from a greater number of happy and successful marriages among the younger people, fewer but better and healthier offspring instead of an unrestricted procreation of the underfed, the tuberculous, the alcoholics, the degenerate, the feeble-minded and insane, would more than outweigh the isolated in-

stances of sexual intercourse prior to marriage.

I absolutely agree with our moral teachers when they say that self-control is possible, but while it may be easy for many it is not easy for all. Sociologically speaking, it is even more difficult when you deal with a married couple belonging to the poorer classes who cannot have separate bedrooms. Self-control can be more easily exercised prior to marriage than afterwards.

The critics of birth control maintain that with the knowledge of birth limitation many women, whether poor or rich, who should and can bear children will shirk the duties of motherhood. This I do not believe to be true. You can no more prevent the desire for motherhood in the normal, healthy woman than you can stem the tide of the ocean. It is inherent in every woman's heart. With more marriages of young people and a rational birth control, I do believe there will not be fewer children but the same number of better ones. There will be, of course, instances—and there are too many in certain classes of society now—where for purely selfish reasons the marriage remains barren, but it is a question in my mind whether it would be really desirable for society to have such women be mothers.

It has been asserted by the same critics that the enfeebled, diseased, ignorant, and poverty stricken woman in whose case birth control might be justified, will never know about the existence of birth control clinics. In Holland, however, there must have been some such ignorant women, yet they seem to have learned to avail themselves of the service of such clinics. Besides, these classes will sooner or later come under the observation of some physician, either privately or in a hospital. Some opponents to the birth control propaganda say that the measure advocated would not reach the feeble-minded, the idiotic, half insane, chronic alcoholics, and chronic criminals. This I will grant, and sterilization of those totally unfit for parenthood will some day have to become a state measure, unless segregation is resorted to more universally and more rigorously. Birth control is only one measure toward a saner and happier manhood, womanhood, and childhood.

Finally, I must mention the almost pathetic criticisms of some of my colleagues who wrote me, in answer to my request for an expression of opinion, that the matter of birth control was a question not for the medical profession, but for the laity. To such I can only express my regret at their attitude. The physician of the twentieth century who deals only with the purely medical and curative part of his profession, who is indifferent to measures to prevent disease, and cannot feel with the social sufferings of the masses, is lacking in the highest ideals of his calling and misses the greatest opportunity of benefiting suffering mankind.

After all is said, I feel impelled to plead with great earnestness for the abolishment of the state and federal laws which make the imparting of knowledge for contraception a criminal offense. I plead for the estab-

lishment of gratuitous clinics, directed by regular physicians of high repute, remunerated by city or state, who are competent to give information as to birth limitation in cases where they deem the giving of such instructions advisable.

Concerning the urgency and the wisdom of efforts to change these laws* I am sure that you will be willing to listen to the words of two of our greatest American physicians; first, to those of our venerable nestor of the medical profession, Professor A. Jacobi of New York, the ex-president of the American Medical Association; secondly, to Professor Hermann M. Biggs of New York, my beloved teacher, the distinguished sanitarian and pioneer in the modern warfare against tuberculosis. In his preface to Dr. William J. Robinson's book "The Limitation of Offspring," Dr. Jacobi says: "Our federal and state laws on the subject of prevention of conception are grievously wrong and unjust. It is important that these laws be repealed at the earliest possible moment; it is important that useful teaching be not crippled, that personal freedom be not interfered with, that the independence of married couples be protected, that families be safe-guarded in regard to health and comfort, and that the future children of the nation be prepared for competent and comfortable citizenship."

Dr. Hermann M. Biggs, prior to the recent dismissal of the case by Judge Dayton of the Federal Court, against Mrs. Sanger for sending information about birth control through the mails, gave to the press the following statement: "I am strongly of the opinion that the present laws in regard to the giving out of information in relation to the governing of infant control are unwise and should be revised. There can be no question in the mind of any one familiar with the facts that the unrestricted propagation of the mentally and physically unfit as legally encouraged at the present time is coming to be a serious menace to civilization and constitutes a great drain on our economic resources. This is my personal view."

To the foregoing expressions of opinions let me add what one of our most distinguished jurists, the Hon. Judge William H. Wadhams, of the Court of General Sessions, wrote me concerning these laws: "In order to save the state from the burden of large families, where there is no possibility of their being supported and where

* United States Criminal Code, Section 211 (Act of March 4, 1909, Chapter 321, Section 211, U. S. Statutes at Large, Vol. 35, part 1, page 1088 *et seq.*). New York Statute Book, (Section 1142 of the Penal Law). The federal law prescribes a fine of $5,000 or imprisonment of not more than five years, or both, for any one using the mails to give advice for producing abortion or preventing conception. The New York State law, above mentioned, makes the giving of a recipe, drug or medicine for the prevention of conception or for causing unlawful abortion a misdemeanor punishable with no less than ten days nor more than one year imprisonment or a fine of not less than $50 nor more than $1,000, or both, fine and imprisonment for each offense. It will be noticed that both laws make the giving of advice for the prevention of conception as great an offense as producing abortion. According to the New York State law, a "lawful" abortion is permitted and not punishable, but to prevent such abortion, always more or less dangerous to life, is not permitted and punishable by law. In all medical colleges careful instruction is given how to perform the "lawful" abortion. All good textbooks on gynecology describe the operation as carefully as an amputation of the cervix or a hysterectomy; but concerning the advice to give, for example, to the poor tuberculous mother who has had her uterus emptied once, so that she may not be obliged to submit to such a "lawful" operation again, our teachers of gynecology and our textbooks dare not say a word.

the neglect which follows often results in their becoming State charges not only because they are mentally but often physically unfit to bear the burden of life, I am of the opinion that there should be some proper birth regulation after a certain number of children have been born, and that, therefore, there should also be some modification of the laws with respect to the giving of information upon this subject. I think the sanitary, medical, social, economic, and moral status of the population would be improved by proper and more general information upon this subject."

Besides the letter from this eminent judicial authority and the strong expressions of opinion of A. Jacobi, M. D., and Hermann M. Biggs, M. D., I have been the recipient of communications from many leading physicians, divines, political economists, and sociologists, all agreeing with me that judicious birth control, under the highest ethical and medical guidance, is a national necessity and that our present laws on the subject need urgent revision. For want of space I will mention only the following: Dr. John N. Hurty, secretary, Indiana State Board of Health; Dr. Godfrey R. Pisek, professor of diseases of children, New York Post-Graduate Medical School and Hospital; Dr. J. W. Trask, of Washington, D. C.; Dr. Lydia Allen de Vilbiss, formerly of the New York State Department of Health, now in charge of the division of Child Hygiene of the State Board of Kansas; Dr. Ira S. Wile, editor of *American Medicine*, New York; Dr. John A. Wyeth, professor of surgery and president of the New York Polyclinic Medical School and Hospital, ex-president of the American Medical Association and New York Academy of Medicine; Frank Crane, D. D., formerly pastor of the Union Congregational Church of Worcester, Mass., now well known writer of leading editorial articles; Percy S. Grant, D. D., rector, Protestant Episcopal Church of the Ascension of New York City; Frank Oliver Hall, D. D., minister of the Church of the Divine Paternity, New York City; John Haynes Holmes, M. A., Minister, Unitarian Church of the Messiah, New York City; Stephen S. Wise, D. D., Rabbi of the Free Synagogue, New York City; James A. Field, Ph. D., Professor of economics, University of Chicago; Irving Fisher, Ph. D., professor of political economy of Yale University and chairman of the Hygiene Reference Board of the Life Extension Institute; Franklin H. Giddings, Ph. D., professor of political science, Columbia University; William H. Allen, Ph. D., director of the Institute for Public Service of New York City; Hon. Homer Folks, former commissioner of charities of New York, now secretary of the State Charities Aid Association of New York; Lillian D. Wald, founder of the Henry Street Settlement and originator of the work of the School Nurse in New York; Prof. Melvil Dewey, LL.D., educator and president of the National Society for Efficiency.

I leave it to this distinguished body of physicians and sanitarians either to send a memorandum to the federal and all state governments setting forth the reason for a change of these laws, or,

if it is thought wiser, to form a committee to study the best and most practical suggestions for federal or state legislatures to act upon.

Dr. William L. Holt, writing on birth control as a social necessity and duty, says: "Conscious and limited procreation is dictated by love and intelligence; it improves the race. Unconscious, irresponsible procreation produces domestic misery, and half-starved children. Conscious procreation of human lives elevates man to the gods. Unconscious procreation degrades man to the level of brutes."

May I be permitted to close with what I am free to confess is my innermost conviction? I believe in birth control, that is to say, birth limitation, based on medical, sanitary, ethical, moral, and economic reasons. I believe in it because with the aid of it man and woman can decide when to have a child, work and prepare for its arrival, welcome it as the fulfilment of their heart's desire, watch over it, tenderly care for and educate it, and raise it to be what every child should be destined to be—a being happy, healthy, strong in mind, body, and soul. If we but use our God-given sense to regulate the affairs of government and family wisely and economically, this great world of ours will be one of plenty and beauty where the good will predominate over the evil and the children born in it will become men and women only a little lower than the angels—images of their Creator.

DISCUSSION.

Dr. Ira S. Wile, *New York City:* In reading the thoughtful paper of Doctor Knopf a number of thoughts suggested themselves. Birth control is recognized today as a factor in eugenic control. Some states take cognizance of the advantages of limiting the number of offspring in so far as defectives and criminals are concerned. The laws of numerous states permitting sterilization or asexualization place the seal of governmental approval upon the prevention of procreation in the interests of the public weal. Numerous regulations providing for the segregation of defectives represent crystallizations into law of the principle that the state has a vital interest in controlling the birth of certain types of citizens. States requiring a certificate of health previous to marriage point out a deep interest in the character of health of those who are to become parents. The underlying principle is the protection of the state from the development of undesirable children.

The law recognizes the interruption of pregnancy as legal and justifiable in order to save the lives of women suffering from tuberculosis, nephritis, cardiac diseases, or from conditions, whose fatal progress would be hastened through continued pregnancy, but the law holds it to be illegal to teach these same women how to avoid conception. It is manifestly contrary to every principle of modern preventive medicine that there should be such interference with the judgment and action of physicians where it seems most rational and medically sound to give advice as to the methods of preventing a condition containing a hazard to life.

Despite the existing laws, contraception is practiced and undoubtedly taught by members of the medical and nursing profession, as well as by midwives. What is equally important is the fact that contraceptives are sold in drug stores throughout the country without any interference, providing conscience is stretched and the instrumentalities are dispensed on the plea that they are agents for the prevention of disease.

It is known that in 1900 there were only three-quarters as many living children to each 1,000

potential mothers in the United States as in 1860. The reason for this decreased birth-rate is undoubtedly in a large part due to "the deliberate and voluntary avoidance or prevention of child bearing on the part of a steadily increasing number of married people, who not only prefer to have but few children, but who know how to obtain their wish" to quote the words of Dr. John Shaw Billings. At the present time, the practice of birth control is more or less limited to the more intelligent part of the population and indeed to those whose means would most warrant the development of large families.

Public health sees in poverty its great enemy and realizes that education is its most capable ally. The education of potential parents as to the methods of preventing conception may be regarded distinctly as a public health measure. From the standpoint of the welfare of the race, those interested in public health measures are more vitally interested in the vigor and quality of children born than in their absolute numbers. The birth of the most vigorous children, those least susceptible to disease, and possessing the greatest chance of living are the particular types of infancy in which health officers should be interested. The reduction of dysgenic types of offspring and the decrease of infants variously handicapped, whose care-needing existence lessens family vitality represent a considerable part of the public health problem.

The tremendous wastage of human life resulting from stillbirths, congenital diseases, malformations, puerperal injuries and infections, and economic pressures may be partially offset by a properly controlled system of dissemination of information concerning the limitation of offspring. The old doctrine of the survival of the fittest has been superseded by our more artificial and humanitarian program which permits the survival of even many of the weakest of the infantile population.

It is well known that the rate of infant mortality, as pointed out in the paper of Doctor Knopf, increases with the size of the family. To quote from Doctor Hibbs in his discussion of Infant Mortality: Its Relations to Social and Industrial Conditions, "However dangerous 'race suicide' and the declining birth-rate may be there can be little doubt that excessively large families is no remedy and however desirable a high rate of births may be, it is mere waste to bring children into the world faster than the laws of nature decree to be desirable." Race suicide is not due to limiting the number of births, but is determined by the ratio between births and deaths. From the standpoint of public health, it is a greater degree of race suicide to bring six children into the world and lose two or three than to have two born and reared. The social consequences of large families with the accompanying loss in lives and vitality have been sufficiently described, so that further comment is unnecessary.

From the standpoint of public health, it is important that a very sharp line of demarcation should be established between abortions and the prevention of conception. The interruption of pregnancy to destroy a developing ovum entails physical hazards to the woman which often adds to the mortality rate. At the same time this is equally the destruction of life as foeticide and, literally speaking, infanticide. According to DeLee, while abortion occurs oftener among the lower classes, criminal abortion is more frequent among the more educated classes.

Howard Kelly (Medical Gynecology, page 449) comments "to what extent the medical profession is responsible for the murder of the unborn" is shown by the methods that women employ to induce abortions upon themselves making use of antiseptic technic in which they obviously had been instructed.

The Report of the Special Committee on Criminal Abortions quoted in Textbook of Legal Medicine and Toxicology (Peterson and Haines, Volume II, page 92) "estimated that one-third of all pregnancies throughout the country end in abortions. This is estimated at not less than 100,000 yearly. A large number of these are criminal abortions from which the committee estimated that 6,000 women die yearly." A fact of this character merits careful consideration by a public health association with a view to pointing out to the intelligent laity and legislators the importance of differentiating between the prevention of conception, which carries practically no morbidity and certainly no mortality, and abortion, which may cause destruction of two lives.

Howard Kelley in discussing syphilis (Medical Gynecology, page 423) states "It is the recog-

nized duty of all physicians in the presence of any contagious disease to protect others from the risks of infection. In the case of syphilis, where there is a question of its introduction into marriage, the physicians' protective duty embraces not only the prospective wife, but the children she may bring into the world and through them the interests of society." (Page 424.) After marriage has occurred "when a married man has syphilis the first indication is to prevent the contamination of his wife, the second is to guard against pregnancy." The interpretation of the term "guarding against pregnancy" opens up the question as to how this is to be accomplished without violating existing laws.

It is urged that the frank discussion of methods of contraception by physicians will lead to an increase of clandestine relations among unmarried girls by virtue of the new knowledge. Clandestine prostitution exists today and fear of pregnancy is not an impassible barrier. The development of a conscious morality, which is the greatest protective force, should not be based upon fear. Admitting for the sake of argument that the same degree of immorality might exist, there would be at least a decreased destruction of life for the women now illegitimately pregnant and the fetus to be destroyed. Fewer homes would suffer disgrace, foundlings would decrease in number, while an accursed bastardy would be greatly diminished.

I do not advocate, however, that knowledge concerning the prevention of conception should be given to the young, but merely to adults and only to those who are wedded. It cannot be denied that a law of this character would undoubtedly be broken just as is the present law today. The transmission of some facts with reference to contraception is constantly going on, but they emanate from polluted sources and reflect folk lore rather than intelligent medical opinion.

I do not favor the abolition of federal or state laws which deal with abortions, though owing to the weight of public opinion convictions for violations of these laws are remarkably limited in view of the large number of violations occurring annually. I believe and would urge that the federal and state laws be amended so that in effect the procuring of an abortion and the preventing of conception will be dissociated as acts not synonymous in character and meriting entirely different treatment. The procuring of an abortion should still be penalized. The prevention of conception should be permitted. The New York State law links prevention of conception and unlawful abortion, thus indicating the legality of certain types of abortion.

Because the state already recognizes its right to limit procreation among certain groups of the population, because the decrease in the birth-rate will result in improved public health and the social economic improvement of the masses of this country, because prevention of conception would add to the health and racial betterment of the nation, I believe that the American Public Health Association should take a stand upon the subject of limitation of offspring. To this end, I urge that resolutions be passed favoring the amendment of federal and state laws, so that the words preventing or prevention of conception be eliminated thereform.

Dr. J. H. Landis, *Health Officer, Cincinnati, Ohio:* It goes without saying that we are all in favor of reducing the number of those who are physically, mentally and morally unfit and adding to the number of those who are physically fit, mentally sound and more highly developed morally.

The paper brings to our attention a number of facts that have long been recognized as true. No one will deny that the offspring of a tuberculous mother has a poorer chance of living than one from a mother without a wasting disease or that the healthy mother has a better chance of surviving pregnancy than has her diseased sister.

No one doubts that infant mortality is greatest among the offsprings of the ignorant, the poor, the underfed and badly housed, the tuberculous, the degenerate, the alcoholic, the vicious and the mentally defective.

Congestion and lack of air and sunshine have long been recognized as powerful predisposing factors in the dissemination of disease and death among those exposed.

The remedy suggested for all of these conditions is birth control. The remedy is directed towards the effects produced instead of being directed at the causes producing them.

I am unable to see how birth control is to solve the problems created by vice, poverty, ignorance and alcoholism while these conditions go on unchecked, and am unwilling to believe

that the size of the family has anything to do with any of them with the possible exception of poverty.

The pride and glory of the medical profession is bound up in the word "prevention." Humanity owes us a far greater debt for sickness prevented than for sickness cured.

A multitude of causes are responsible for the high tuberculosis rates that prevail. The disease is one of the most contagious with which we have to deal. Nature's favorite method of removing the unfit, from any cause, is by the tuberculosis route.

The control of tuberculosis involves all of the factors active in producing individuals who are rendered susceptible by these factors, the quarantining of those who are spreading the disease and the care of those other members of the family rendered dependent. Birth control can play only a minor rôle in the control of this disease.

Birth control will not enlighten the ignorant, render the poverty-stricken affluent, transform the alcoholic into a total abstainer, make the vicious virtuous, or remove the cloud from the brain of the mentally defective.

Definite causes are combining to produce these results and the logical point of attack is the combination of causes.

The ignorant can be educated; the poor made more thrifty; the vicious forcibly restrained; and the mentally defective rendered incapable of reproducing their kind.

The prevalence of typhoid fever is an index to the purity of a community's water and milk supply. Filtration of water and pasteurization of milk have solved the typhoid fever problem in those communities in which they have been efficiently carried on.

Vice, crime, tuberculosis, poverty, degeneracy, alcoholism, ignorance and feeble-mindedness are as distinctly due to particular preventive causes as typhoid fever is to impure water and milk, and it appears to me that birth control would be as impotent to control the first set of conditions as it would be to control typhoid fever.

Dissemination of the knowledge of birth control would, in my humble judgment, decrease the number of fit and increase the number of unfit for the reason that the knowledge would be applied by those capable of producing normal children and ignored by those unfit individuals who are under the guidance and control of the most powerful primal instinct.

Dr. J. N. Hurty, *Indianapolis, Ind.*: We, the people are suffering from many delusions. Nearly everyone entertains the delusion, that they can violate the laws of nature, abuse their bodies, bring on disease and degeneracy, and then find repair in a medicine. It is a fool idea, yet it is very general. There are other delusions. There is only one way to improve the human race, and that is the natural way. The first high point of interest in the paper is when Doctor Knopf says—"My appeal is not a plea for reducing the population but for increasing its vigor by reducing the number of the physically, mentally and morally unfit and adding to the number of the physically strong, mentally sound and higher morally developed men and women." Certainly no one on any score can object to this. The idea is practical, pure and lofty. If general birth control will help it onward, even a little bit, then I am for general birth control. I suppose no one would advocate the raising of idiots or physically deformed people, yet when it is proposed not to raise them, through the practical application of sterilization or segregation, up goes a howl from the prudes which is of a character likely to provoke emesis. It is important and interesting to learn that when tuberculosis appears in a large family, it is generally numbers 5, 6, 7, 8 or 9 of the children that are stricken. This is indeed significant, and I believe it to be true. When I read this in Doctor Knopf's paper I made some inquiries of two men who have done a great deal of tuberculosis work, and they confirmed it and said they believed it was true. Again, Miss Duke's Johnstown figures speak loudly against families of above four children. For a pair to have more is generally to invite sickness, invalidism and death, and if we will stop to think and look around among the prosperous, great and strong people as a rule (of course there are exceptions) they do not have families of more than four and generally about two. I do not believe that this condition has been brought about by continence. Surely pregnancy is contra-indicated in a tuberculosis woman unless it is desirable to kill her and add to the number of pitiful motherless babies. A husband who cannot be continent with a tuberculosis wife is a sorry specimen of manhood and truly such speci-

mens are many. And here I think it proper to say that birth control will not likely ever be a resultant of voluntary continence. Like education and monogamy, it must be forced upon most of the animals we call men. An important point made by Doctor Knopf is, "would or could a syphilitic or gonorrhoeic parent know how to prevent conception during the acute and infectious stages of his or her disease, there would certainly be less of congenital syphilis, less blindness from gonorrhoeal infection." If these ends can be gained, even in slight degree, by birth control, I'm for it strong. I remember the doctor in "Damaged Goods" says—"It is better to have fifty sound and whole men than to have a hundred, sixty or seventy of whom are more or less rotten."

That is an important interrogatory in the paper which reads—"What is the physiological effect of voluntary artificial restriction of the birth-rate of the offspring?" The answer is satisfactory, for the reports from Holland, where the medical profession have openly approved and helped to extend artificial restriction, are to the effect that the morbidity and mortality rates have improved more rapidly than in other countries. Holland also supplies data to prove that rational birth control does not mean race suicide, but on the contrary, race preservation and strengthening. Doctor Holt, as quoted by Doctor Knopf, talks wisely when he says—"Conscious and limited procreation is dictated by love and intelligence; it improves the race. Unconscious, irresponsible procreation produces domestic misery and half-starved children. Conscious procreation of human lives elevates man to the gods; unconscious procreation degrades man to the level of brutes." It is plain that Doctor Knopf has contended and written well. Conscientiousness in his contention is apparent. I am sure good will follow his effort.

Dr. W. L. Holt: I should like to call your attention to the fact that we as a nation, like all the civilized nations, are already practicing birth control; but in a very stupid and mistaken way. Namely just that part of the population which is called "the upper class," which is undoubtedly superior physically and mentally as well as financially and accordingly produces the most desirable children and ought to produce at least its share of the future generation, is practicing birth control to such an extent that the old families are dying out; whereas the inferior part of our population, which is also financially least able to raise four children, is raising four and more. What could be more stupid?

Dr. Louis I. Dublin, *New York City:* The other day I contributed a paper in another section on the commoner errors in statistical work. I wish I had had Doctor Knopf's paper at my disposal for I could have used it very profitably for my text. I do not recall any paper that I have read for some time that is more subject to criticism on the score of method than the paper we have just heard. I believe it is fundamentally erroneous because of the emotional attitude of the writer which has caused him to draw general conclusions from an examination of only a very limited part of his subject. His emphasis is entirely in the wrong place. There is altogether too much birth control now and what the community needs is emphasis on birth release by the healthy, capable and self-respecting elements of the community.

There is time only for one word and I want to limit that to the story of France. In France, we have today a sorry spectacle of the results of birth control. The lesson is obvious. France is today crying for men; for men who were either not born or died at an alarming rate in infancy or later of tuberculosis. The attitude of mind which is engendered by a nation-wide policy of birth control ultimately brings about more infant mortality and more tuberculosis because of the general weakening of the stock which directly results therefrom.

A Member: It strikes me that the whole question resolves itself into who should marry and who should not marry. Unless we have some laws regulating marriage, to teach young men and young women the nature of the social diseases and the conditions necessary for a good physical body, why, we will have tuberculosis, we will have degenerates, we will have idiots and imbeciles and our penitentiaries and almshouses and every other penal institution will be filled. The whole question is prevention; I believe strictly in the doctrine of heredity. Heredity, environment and education is the triangle that leads to greatness. If we do not hover around those three points, we will never succeed. We know that if two degenerates marry, they beget degenerate children, beget imbeciles. If an imbecile marries a normal

person, half of the children will be imbeciles or degenerates, and we have the records of criminality and all those deficiencies and the penalty is the result of improper marriage. Teach the laws of nature and our mothers will demand that their daughters don't marry a man who has in his veins the virus of a venereal disease circulating through his body.

Dr. John W. Trask, *United States Public Health Service, Washington, D. C.:* The subject may be approached from a number of different angles. During the discussion a thought has occurred to me which may be worth presenting. What is the common reason for wanting the population to grow? What is at the bottom of the more or less prevalent idea that it is meritorious to be the parent of many children? It has occurred to me while sitting here that chambers of commerce and boards of trade want the populations of their respective cities to increase—the faster, the better—because it is to their interest to have more individuals to sell things to, more individuals to whom they can sell dry goods, clothing, and groceries, more individuals to whom to sell houses and land. The greater the population the more business will be done and the greater the increase in the value of real estate. On the other hand, those interested in affairs of state may want the population of their country to grow that there may be a larger group from which to draw an army for purposes of defence or perhaps offence. Birth control is opposed in a way to the interests of business and of the holders of real estate. Nor will it be the best national policy where a growing population and large armies are necessary as a protection against invasion or oppression by lawless peoples. However, it would seem at least worthy of consideration whether the best conditions would not be attained by families commensurate in size with the household incomes and by nations commensurate in population with their areas, economic conditions and natural resources. Better people, living cleaner, healthier and more rational lives, and not more people, would seem to be the logical objective.

Dr. Knopf:* My first duty is of course to thank you all for the very kind attention you have given to my paper on a rather unusual and, in some circles, rather unpopular subject. It shows that you have come here determined to listen and then to judge—to accept my ideas, to reject them, or to suspend judgment.

Dr. Ira S. Wile agrees with me so thoroughly that I see very little reason to take up time in referring to his paper, except to thank him for his coöperation and particularly for the strong opinion he has expressed concerning the urgent need of recommending an amendment of the federal and state laws to the effect that the procuring of an abortion and the prevention of conception will be disassociated, and considered as acts meriting entirely different treatment. We all agree that producing an abortion for no other reason than to rid a healthy mother of an unwelcome child is a crime and should continue to be considered as such.

Doctor Landis' paper is a little surprising to me. When the doctor says in today's discussion that birth control will not do away with our social evils, will not render the poverty stricken affluent, not transfer the alcoholic into a total abstainer, nor remove the cloud from a mentally defective, he is but partially right. Birth control has enlightened the ignorant in Holland and has rendered the poverty stricken not affluent but economically more comfortable; it has decreased crime, immorality, and illegitimacy. At the same time, I do not for a moment think that birth control alone will do away with the procreation of the feeble-minded, idiotic, half insane, chronic alcoholics, or chronic criminals. Birth control is not a panacea for all the ills of society, it is only one measure toward a saner and happier man-, woman-, and childhood. To minimize the harm to society and to future generations produced by the just mentioned class of unfortunates, the state should step in and demand medical examination of both the prospective father and mother, prior to granting them a marriage license. Even with our present limited but growing knowledge of the laws of heredity we should be able to prevent many of the evidently unfit from becoming parents and save many a child of tomorrow from a handicapped existence—a burden to himself and others.

As already indicated in my paper, there is a certain class so mentally and physically diseased that sterilization, or at least segregation, must be resorted to. Doctor Landis is absolutely right when he says that "A multitude of causes are responsible for the high tuberculosis rates

* This discussion has been revised and enlarged since its presentation.—Editor.

that prevail." If I did not think that, would I have devoted twenty-five of the best years of my life to the combat of tuberculosis? Bad housing conditions, bad factory hygiene, overcrowded and unhygienic schools, useless studies and not enough outdoor play for the children, child labor, ignorance on the part of the laity, the late diagnosis of the disease on the part of the profession, failure of rational treatment and lack of institutions, are some of the multiple causes responsible for the high tuberculosis morbidity and mortality rate.

Those of my colleagues who have honored me by their steadfast friendship and constant cooperation will bear me out when I say that I have done my best to help to remove these causes during years of conscientious labor. And when you ask me why I became suddenly interested in birth control, apparently so foreign to my specialty, I will tell you. After all it was not so sudden as it seems. I have worked among the tuberculous for a quarter of a century, the rich and the poor, in palatial homes and humble cottages, in dark and dreary tenements and over crowded hospitals; I have witnessed the tears and sufferings of many a tuberculous mother to whom I have had to decline help because it was too late to prevent. The despair of the poor, frail creature at the prospect of another inevitable confinement, and later the sight of a puny babe destined to disease, poverty, and misery, have opened my eyes to the utter immorality of thoughtless procreation; and my experience has been extended over only one disease of the masses.

I have approached the subject of birth control after deep reflection and with due reverence for all that is sacred in man's physical, moral, and religious life. I now believe in it with all the sincerity and earnestness I am capable of. I believe in it because by its aid there will rise a generation of men physically, mentally, and morally fit, and children free from disease and prepared to take up the struggle for life.

I must revert once more to my friend, Doctor Landis' discussion of the tuberculosis problem. I said he was absolutely right in the statement that a multitude of causes were responsible for the high tuberculosis death rates that prevail. But I say with equal emphasis that he is absolutely wrong when he says in the following sentence that "the disease is one of the most contagious with which we have to deal." It is not the most but the least contagious and should always be classed with communicable diseases. It should not be considered as most contagious like smallpox for example. On the contrary, strictly speaking; it is not contagious at all, as the word contagious comes from the Latin *contingere*, "to touch." The touch of the honest, conscientious, and clean consumptive is no more contagious than that of a healthy person. This can hardly be said of the smallpox patient, be he ever so clean. It is best for an unvaccinated individual never to touch him, and still better to stay away from him as far as possible.

I would consider it a most regrettable thing if it should go out to the public that a distinguished member of the American Public Health Association has suddenly declared tuberculosis to be the most contagious of diseases. We have already too much phthisiophobia which makes the lot of the unfortunate consumptives hard enough.

For the kindly words said by my good friend, Doctor Hurty, I am deeply grateful. He is always progressive, fearless, and outspoken. He agrees with me so thoroughly that I feel he will do his share toward a better understanding of the problem under consideration and be an enthusiastic supporter of the all important movement for the betterment of mankind, which he loves so much.

To the member whose name I could not catch and who maintained that the whole question resolves itself into who should marry and who should not marry, I wish to say that it was merely for lack of time that I did not touch on this subject in my paper. That I strongly advocate a medical examination of the man as as well as the woman prior to granting a marriage license, I have already said in my reply to Doctor Landis' criticisms. Much unhappiness and misery could be avoided by such obligatory examination and if we could add to our institutions of learning a school of parenthood with obligatory attendance for every one desiring to enter the matrimonial state, we would add still more to the happiness and prosperity of the individual and the community at large.

Now a word to our Catholic friends and those of other faiths who are so strongly opposed to contraception and limiting family increase.

Let us have no word of bitterness or reproach because millions of devout Catholics hold these views. Let us not antagonize either the Catholic priest or layman, who have a right to their convictions as much as we have to ours. This is a purely scientific meeting, composed of men who should not have, and I hope do not have, any hatred in their heart because of differences of opinion regarding purely religious views. Therefore, in reply to the somewhat passionate remarks of the distinguished statistician of the Metropolitan Life Insurance Company who questions the accuracy of my statistics and all of my statements, and says that it is all fundamentally erroneous, I wish to reply with less vehemence. I would calmly state that if we do not believe in official statistics of one kind, we cannot believe in official statistics of another kind. Mine were prepared by the government in Holland and by the United States government and officials of various cities. The gentleman makes the statement that because of my emotional attitude toward the question of birth control, my conclusions are fundamentally erroneous and drawn from an examination of only a very limited part of my subject. Mr. Dublin is not a physician; he is a Doctor of Philosophy, and this perhaps is an excuse for finding fault with my emotional attitude. My experience as a physician has brought me into contact not only with the happy and well-to-do but also with the poverty stricken and the mentally and morally diseased, with the unfortunate girl-mother and our unfortunate sister the so-called prostitute, and last but not least, with the honest but poor and ignorant mother of a large family who is a slave by day and by night. I have made earnest attempts to lessen the misery caused by thoughtless procreation, and I may perhaps be forgiven if I have approached the subject with deep conviction and not without emotion. We physicians cannot, and God forbid that we ever shall, deal merely with cold figures and statistical facts. We love science, yes, and accuracy in science and statistics, but this does not prevent us from feeling with our patients in their sufferings of mind, body, or soul.

I do not at all disagree with the gentleman when he speaks of birth release by the healthy and well-to-do. In my paper I have referred to this and also believe to have distinctly shown that I do not plead for race suicide but most emphatically for race preservation and multiplication of the best and noblest, physically, mentally, and morally. What I think of France of today, I have already said, and when the gentleman says that France is crying for more men, I might first say that the quality of the French soldiers has made up for the quantity. Russia has had and has the most men. It does not cry for more men, and still its achievements do not compare, at least not up to this day, with the achievements of France.

Lastly, when Dr. Dublin says: "The attitude of mind which is engendered by a nation-wide policy of birth control, brings about more infant mortality and more tuberculosis because of the general weakening of the stock which directly results therefrom", I most thoroughly disagree with this argument. My personal statistics regarding the frequency of tuberculosis among the later born children in large families have been, as you have heard, corroborated by Dr. Hurty's investigations; and all physicians know that women, particularly those of the working classes when worn out by frequent pregnancies, are more subject to tuberculosis than almost any other class of people. How then can Dr. Dublin believe that birth limitation would cause more tuberculosis? In Russia, where the word birth control is unknown, tuberculosis and infant mortality are the highest of all civilized countries. On the other hand, in Holland where we might speak of nation-wide birth control, as already stated in my paper, after forty years of this policy there is less infant mortality, an increase in population, a better physique, and a higher morality. Furthermore, there has not been a general weakening but a general improvement in the strength of the stock which is shown by an increase in stature and increase in the longevity of the population at large.

My good friend, Assistant Surgeon-General John W. Trask, has admirably answered the question as to what, aside of the war and its demands for more men, is the common reason for wanting the population to grow. It is a splendid answer and I could not possibly improve on it but wish to thank him most heartily for what he said. And here I cannot help saying one word which, however, I hope may not be misunderstood. I am an American to the core of my being, but my cradle stood in Ger-

many whose people I love as warmly as ever; and yet I cannot help feeling that the over-population of Germany has been one of the vital causes of this disastrous war which has brought so much misery to all humanity. Prof. Robert J. Sprague, of the Massachusetts Agricultural College, expressed this view very strongly the other day at the meeting of the Genetic Association when he said: "The barbaric birth-rate of Germany hemmed in as she is by the other nations, made the great war inevitable and will, if it keeps up, make war forever in the future. Some believe this will work eugenically for the survival and predominance of the strongest and best race, but this is still a mooted question. The survival of the merely strong may result in the survival of the strong animal. Pressure of population on subsistence and area develops brutality, selfishness, and disregard of human life. It crushes leisure, generosity, and art and makes impossible some of the finest virtues of the race."

I have already said how anxious I am that we may treat this subject as a scientific one and that we should only have in view the highest ideal, namely, a normal increase of population concomitant with our resources and an improvement of the quality of our population; in other words, we should strive to render the lives of man, woman, and child more healthy and more happy, and economically secure. My personal belief is that we shall thereby become more highly developed spiritually and approach more rapidly towards the millennium. When at last an enlightened government will permit contraception to be taught where it is likely to be productive of the most good, when in years to come we can show our Catholic brethren and all those who oppose us now that because of judicious birth control resulting in a rational family limitation, we have decreased poverty, disease, and crime and have produced a better generation of men and women, better equipped physically, mentally, and morally for life's mission, in short, men worthy to be called true citizens of a great republic, then I am sure our Catholic friends and other opponents will see that after all we have not been so wrong and they may then be willing to follow along the same lines of teaching rational birth control.

Nature's forces are blind. She creates without thought of provision for the offspring. Think of bacterial life if it had remained unchecked by the genius of a Pasteur, a Koch, a Lister; of the insects, such as the yellow fever and malaria-spreading mosquitoes, if unchecked by a Reed and a Gorgas! I could continue the theme of man's triumph and control over nature indefinitely if I were to enter into the field of agricultural and industrial science. I could tell you of the battles of the Australian farmer with the rapidly multiplying rabbit. Here nature's blind tendency to procreate devastated the fields destined to nourish the population. If non-interference with thoughtless nature comprises one of the tenets of the religion of others, to me man's intellectual control over nature's blind forces and nature's thoughtless procreation of undesirable bacterial, insect, or animal life, and his powers to bring forth more useful products and make life for man, woman, and child not only more bearable but even more beautiful and glorious, are among the greatest proofs of the existence of God's power in man. But the greatest of all achievements, the most divine gift which God has bestowed upon man, is conscious procreation. To me, judicious birth control under the guidance of the best and ablest among our own profession, among the clergy and the sociologists, based on the highest conception of sanitary, medical, moral, ethical, and economic reasons, can well be considered a spiritual asset which will uplift the race.

A MEDICAL COMMISSION, BUT NO MEDICAL MAN ON IT.

According to the newspapers, President Wilson has nominated as members of the workmen's compensation commission, to administer the federal Employees' Liability Act, the Reverend R. McMillan Little of Swarthmore, Pa., a preacher in the United Presbyterian Church; a Mrs. Axtell of Bellingham, Wash., a social worker and a defeated candidate for Congress, and a J. J. Keegan of Indianapolis, a member of the International Association of Machinists, formerly a member of the state legislature, and more recently a commissioner of conciliation in the Department of Labor. The first of those mentioned above is stated to be a Republican, the second a Progressive, and the third a Democrat; none is a physician. Probably 90 per cent. of the work of the commission will be medical in character.—*Journal of the American Medical Association*, January 27, 1917.

A YEAR'S WORK IN HAY-FEVER-PREVENTION IN THE UNITED STATES

WILLIAM SCHEPPEGRELL, A. M., M. D.,
President, American Hay-Fever-Prevention Association; Ex-President, American Academy of Ophthalmology and Oto-Laryngology, New Orleans.

Read by title before General Sessions, American Public Health Association, Cincinnati, Ohio, October 27, 1916.

THE American Hay-Fever-Prevention Association was organized for the education of the public in the relationship of pollens to hay-fever, the inauguration of legislative methods for the eradication, as far as practicable, of the weeds that cause this disease, and for the scientific study of the best therapeutic methods.

Education and legislation in this case, as in other important sanitary measures, are closely allied. Without proper education in the advantages and necessity of such measures, legislation is hard to enact, and difficult to enforce. Without legislation, however, only partial benefit is obtained from education, as there are always many persons who will respect their neighbor's rights and health only to the extent enforced by the law.

Education in the relationship of pollens to hay-fever has made excellent progress during the past year. The public was first impressed with the fact that the principal causes of hay-fever in the United States were the ragweeds, whose pollen during the months of August and September filled the atmosphere with their irritating pollens, and that these, as well as most of the other plants which cause hay-fever,* had already been outlawed by the agricultural interests.

The subject was presented to the medical profession through many of the principal journals, such as the *Journal of the American Medical Association*, the *New York Medical Record*, the *New York Medical Journal*, the *Journal of the Southern Medical Association*, the *New Orleans Medical and Surgical Journal*, and through a large proportion of the bulletins of the various state boards of health.

The general public was made familiar with the relation of pollen to hay-fever through many of the most prominent periodicals, such as the *Country Gentleman*, *Collier's*, the *Florist's Exchange*, the *Outlook*, the *Musical Courier*, the *Rural New Yorker*, the *Scientific American*, *Current Opinion*, etc.

Many of the most prominent daily papers published articles on this subject, these being taken from the literature of this Association, from the bulletins of the boards of health and from the articles in the medical journals. Among these are the following: The *Pittsburg Dispatch*, *Utica*

*The principal hay-fever weeds are described in "Hay-Fever: Its Cause and Prevention," Scheppegrell, Journal of the American Medical Association, March, 1916.

Herald Dispatch, Knoxville Sentinel, Hartford Daily Courant, New York Herald, Birmingham Age-Herald, Wilmington Morning News, Atlanta Constitution, Augusta Chronicle, Evansville Daily Courier, Minneapolis Journal, Kansas City Star, St. Louis Republic, Omaha Bee, New York American, Albany Journal, Western North Carolina Democrat, Columbus Dispatch, Providence Bulletin, Dallas News, Houston Post, Texas News, Milwaukee Sentinel, Washington Times, Detroit Journal, Cleveland Leader, Charleston News and Courier, Nashville Banner, Saginaw News, Norfolk Ledger, Elizabeth Journal, Ogdensburg News, Rome Sentinel, Post Intelligencer, the New Orleans Times-Picayune, Item and States.

The United States Public Health Service published the report of this Association on "Hay-Fever and Its Prevention,"* which proved of great advantage in the educational part of this work. It stamped the approval of the Public Health Service on efforts to eradicate the cause of hay-fever, and it enabled the Association to supply the popular demand for literature on this subject.

In New Orleans, through the efforts of this Association, an effective grass-weeds ordinance was passed last January. The public had been prepared by popular lectures and newspaper articles on the relationship of weed-pollen to hay-fever, so that the new ordinance was passed without opposition.

Through the efforts of Dr. W. T. O'Reilly, president of the New Orleans Board of Health, and Commissioner E. E. Lafaye, of the Department of Public Property, this ordinance was thoroughly enforced and resulted in a general clearing up of the weeds on the streets and vacant lots. The requirements of this ordinance were as liberal as its object would permit and the penalty made extremely low, so that, although there were more than twelve hundred affidavits issued for violations of this ordinance, it was legally contested in not a single case.

As this ordinance has proved very effective, it is recommended to all city boards of health interested in the destruction of weeds from both a sanitary and civic standpoint. The following is a copy:

Mayoralty of.....
City Hall,.....191
Calendar No.....
No..... Council Series.

An ordinance for the better protection of the public health, and particularly to prevent the spread of disease.

Section 1. Be it ordained by the Council of the City of....., That:

(1) The tenant or occupant of any leased or occupied premises, lot or other area shall not permit weeds or grass over one foot in height to grow or stand on the premises, lot or area leased or occupied by him.

(2) The person, firm or corporation owning any premises, lot or other area, not leased or occupied by another, shall not permit weeds or grass over one foot in height to grow or stand on such premises, lot or other area so owned.

(3) The tenant or occupant of any leased or occupied premises, lot or other area shall not permit weeds or grass over one foot in height to grow or stand on the sidewalk abutting the premises, lot or other area leased or occupied by him.

(4) The person, firm or corporation owning any premises, lot or area, not leased or occupied

*Scheppegrell, United States Public Health Reports, July, 1916.

by another, shall not permit weeds or grass over one foot in height to grow or stand on the sidewalk abutting such premises, lot or area so owned.

(5) A firm or corporation having franchise rights or privileges on the streets shall not permit weeds or grass over one foot in height to grow or stand on any street or area or any part thereof, which, by the terms of its franchise, it is bound to care for or to keep in good order, condition or repair.

(6) For the purpose of enforcing the provisions of this ordinance, a corporation shall be deemed to be represented by its president, or in his absence by its vice-president, or in the absence of both by the officer or individual in charge of the affairs of the corporation, and such representatives shall be held responsible and punishable for any violation by the corporation of the provisions of this ordinance. The owner shall be deemed to be the person, firm or corporation appearing as owner upon the records of the Conveyance Office in the City of .....

(7) Each of the members of a firm shall be held responsible and punishable for any violation by the firm of the provisions of this ordinance.

(8) For every violation of any of the provisions of this ordinance, the person, firm or corporation responsible shall, on conviction for the first offense be punished by a fine of not less than $1 nor more than $25, and for the second and each subsequent offense not less than $5 nor more than $25, and in default of payment of the fine, in either case, by imprisonment in the county prison for not less than five days nor more than thirty days, or both, in the discretion of the court having jurisdiction.

SECTION 2. Be it further ordained, etc., That all ordinances and parts of ordinances in conflict with the provisions of this ordinance be and the same are hereby repealed.

Adopted by the Council of the City of ....., 191 .

.....
Clerk of Council.

Approved....., 191 .

.....
Mayor.

A true copy:

.....
Secretary to the Mayor.

The efforts of the American Hay-Fever-Prevention Association have been officially endorsed by the following state boards of health: Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Delaware, Florida, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Maine, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Mexico, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming. These endorsements proved of great benefit in the educational part of the work as it indicated the national interest in hay-fever eradication.

Much interest has also been shown by many of the municipalities in this work. In Asheville, N. C., for instance, the Board of Trade voted $700 to assist in the campaign against hay-fever weeds. Rochester, N. Y., through the efforts of Messrs. Herbert W. Pierce, commissioner of public works, R. Andrew Hamilton, commissioner of public safety, and Joseph M. Quigley, chief of police, and others, considerable work has been done. The Chamber of Commerce placed on exhibition the hay-fever weeds listed by this Association and the committee of ladies had similar sets placed on exhibition in the principal department stores.

Chicago also, through the efforts of Dr. Willis O. Nance, alderman of the Sixth Ward, instituted active measures against the hay-fever weeds. Similar efforts were also made in San Francisco and Pasadena, Cal., New Haven,

Conn., Jacksonville, Fla., Omaha, Neb., Charleston, S. C., Salt Lake City, and Ogden, Utah, Huntington, W. Va., Maplewood, N. J., Philadelphia, Pa., Memphis, Tenn., Erie, Pa., and probably in many other cities of which we have no official report.

Summing up the results of a year's work, we would state that the educational part has been a great success. We have familiarized the public to a large extent in the relationship of weed-pollen to hay-fever, and its assistance in their eradication is becoming automatic. In New Orleans, for instance, at the commencement of this campaign, 90 per cent. of all the reports of violations of the grass-weeds ordinance came through the official inspectors. During the months of August and September, nearly 40 per cent. came from other persons in the interest of hay-fever subjects.

FIG. 1. Group of hay-fever grasses. The pollen of the grasses form the chief cause of spring and summer hay-fever and rank next to the common rag-weed (Ambrosia elatior) as a cause of hay-fever generally. The group contains: Meadow grass (Poa annua), Bull grass (Paspalum vasyanum), Bermuda grass (Capriola dactylon), Smut grass (Sporabulus angustus), Johnson grass (Andropogon halapense), Feather grass (Leptochloa filiformis), Fox-tail grass (Chaetochloa glauca) and Cockspur grass (Panicum crus-galli).

FIG. 2. Pollen of Bull grass (Paspalum vasyanum). Magnified 500 diameters. Its large size (40 microns) limits its potential area.

The legislative part of hay-fever eradication has also made progress. New Orleans has enacted an effective ordinance and other cities will probably do so at an early date. We have, for instance, a report from the

health officer of San Francisco, that an ordinance, on the lines of the one suggested by this Association, will probably be adopted, and requests for copies of this ordinance have been received from many cities. The educational part of this work, therefore has advanced to such an extent that the enactment of suitable weed laws in cities generally will not prove difficult.

It is important, however, in preparing such ordinances that the requirements should not be too drastic. In a prominent city, for instance, there is at present an ordinance requiring the grass to be kept below four inches, the results of which is continual legal opposition to its enforcement. We have made the limit twelve inches, which is sufficient to prevent the pollination of most hay-fever weeds and is easily enforced. The penalty also should not be so high as to encourage litigation. We have found a penalty of $1 for the first offense, and increasing penalties afterwards, give good results.

We have not thus far attempted state legislation for the control of hay-fever weeds, but this is a question of the near future. The following states already have laws requiring the cutting of certain weeds that are injurious to agriculture: Alabama, Arizona, California, Connecticut, Idaho, Illinois, Kentucky, Michigan, Missouri, North Dakota, South Carolina, South Dakota, Oregon, Ohio, Pennsylvania

FIG. 3. Common rag-weed (Ambrosia elatior) the principal cause of autumnal hay-fever in the United States.

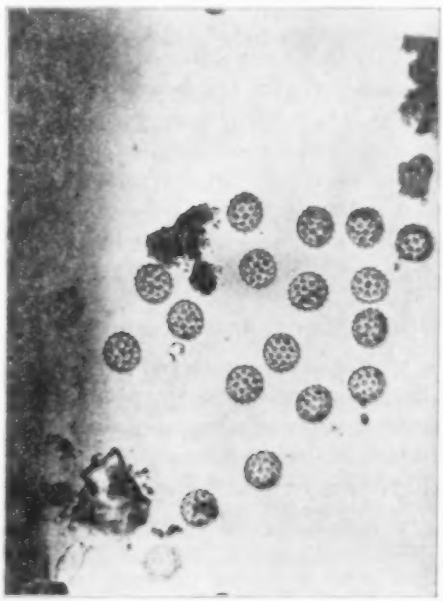


FIG. 4. Pollen of Common rag-weed (Ambrosia elatior). Magnified 500 diameters. Photomicrographed from atmospheric-pollen plate.

and Washington. In these states it will require but little change to include the weeds which are the principal cause of hay-fever. Similar laws in the remaining states will, no doubt, be enacted as soon as the importance of the subject, from both an agricultural and sanitary standpoint, is more fully understood.

The importance of having the country assist the cities in the work of hay-fever eradication should be well understood. As long as the winds are below ten miles per hour, the pollen is borne but a short distance and the cutting of neighboring weeds is quite effective. When, however, the wind velocity reaches fifteen or more miles per hour, some varieties of pollen are carried several miles.

This has been determined by the records of our atmospheric-pollen plates, which have been exposed during the whole of the past hay-fever season. These show that even during the active pollination of the ragweeds, the pollen count per square centimeter for twenty four hours was not more than 3 to 8 per cent., but quickly rose to 60 to 100 per cent. during the prevalence of a wind of twenty miles per hour. The low count, which was the result of the extensive weed-cutting in New Orleans, was not enough to cause many cases of hay-fever, but the higher number was sufficient to develop it in many persons sensitive to this pollen and who had not suffered during the early part of the season.

The investigations of our Research Department have demonstrated that there are two hay-fever seasons in the United States. The first being from May to July and the second from August to September.* The first is due to the pollen of grasses (Fig. 1), and weeds within the cities and whose potential area is so limited on account of the large size of the pollen (30 to 55 microns, Fig. 2) that the eradication or even cutting of these weeds will give entire relief. In New Orleans, for instance, the early form of hay-fever has been practically eliminated by the rigid enforcement of its grass-weeds ordinance.

Fall hay-fever, East of Kansas, however, is principally (85 per cent.) due to the common ragweed (Ambrosia elatior, Fig. 3) whose pollen (Fig. 4) is so light and buoyant (15 microns in diameter) that it is carried several miles by winds of fifteen or more miles per hour. While, therefore, we can eradicate the spring and summer hay-fever by municipal efforts, entire eradication of fall hay-fever requires coöperation of both town and country for its complete success.

In conclusion, we would impress the importance of educating the public in hay-fever-prevention. The large number of hay-fever subjects in the United States, constituting about 1 per cent. of the population who suffer from this disease, are entitled to relief from both a sanitary and economic standpoint, and education in this case means active coöperation in hay-fever eradication.

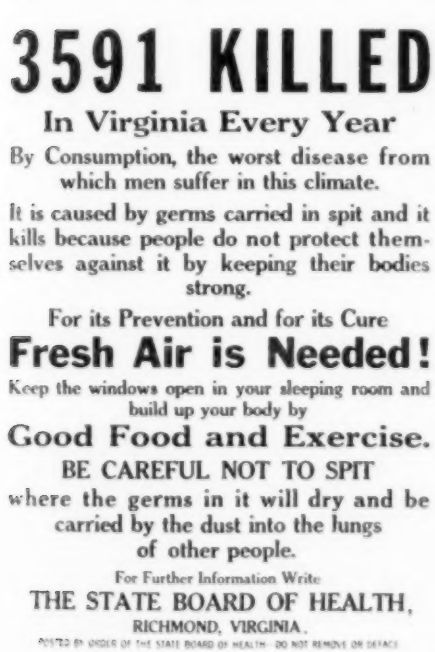
*The hay-fever seasons for each state are described in "Hay-Fever and Its Relation to Seasons, Occupations, Sex and Color," Wm. Scheppegrell, New York Medical Journal, December, 1916.

PREACHING HEALTH ON THE HIGHWAYS.

ENNION G. WILLIAMS, M. D.,
State Health Commissioner of Virginia.

THE same knowledge of human nature that prompted pioneer advertisers to utilize the street-cars long ago led the makers of farm implements and the venders of patent medicines to tack their signs along the roadsides. They knew that men would drive or ride by in a state of mental idleness and would be certain to read any attractive signs that might be posted conspicuously by the road. Our Virginia Board of Health learned its lesson some years ago from these advertisers and, from time to time, has been placarding the roads and the stores. Our first venture in this line was a pasteboard smallpox warning, sent through the mails to the postmasters in rural Virginia, with the requests that it be posted conspicuously on the store-porches. This was followed by a like warning on typhoid fever. In 1912, when the model vital statistics law went into effect, we decided to use the cross roads as well as the stores, and accordingly printed many thousand posters on muslin. These were distributed to the local registrars, and they were generally tacked up where thousands of Virginians saw them.

Early last spring we had occasion to do some intensive community work against malaria and, to aid our field men, we issued a pasteboard malaria placard similar in general design to those we had used as warnings against typhoid fever and smallpox. These were placed along all the roads our men traveled. As one of our investigators had occasion to pass along a road so placarded a few weeks afterward, he found that many of the placards had been torn down and effaced by boys. Much valuable work was thus undone.


3591 KILLED
In Virginia Every Year
By Consumption, the worst disease from which men suffer in this climate.
It is caused by germs carried in spit and it kills because people do not protect themselves against it by keeping their bodies strong.
For its Prevention and for its Cure
Fresh Air is Needed!
Keep the windows open in your sleeping room and build up your body by
Good Food and Exercise.
BE CAREFUL NOT TO SPIT
where the germs in it will dry and be carried by the dust into the lungs of other people.
For Further Information Write
THE STATE BOARD OF HEALTH,
RICHMOND, VIRGINIA.
POSTED BY ORDER OF THE STATE BOARD OF HEALTH—DO NOT REMOVE OR DEFACE

THE BEST FARM
IN THIS COUNTY
Is the one on which the health of the family is best protected.
IT HAS a good well, carefully walled, covered with a tight top and supplied with a pump so that no filth can get in it.
IT HAS a sanitary privy from which flies and animals cannot carry filth and from which filth cannot be washed into drinking water.
IT HAS screens on the windows and doors of the house to keep out flies and mosquitoes.
IT HAS no standing water in which mosquitoes can breed.
To Make it Yours
Write for Full Information to
THE STATE BOARD OF HEALTH,
RICHMOND, VIRGINIA.

PLEASE POST

SMALLPOX

Now Prevails in This County

IF YOU DON'T WANT TO HAVE IT,
If you want to escape the Danger, Suffering, Inconvenience and Expense of the Disease

Be Vaccinated
YOU AND YOUR FAMILY

If you are properly vaccinated you cannot have the disease.

There is no other sure way to avoid it.

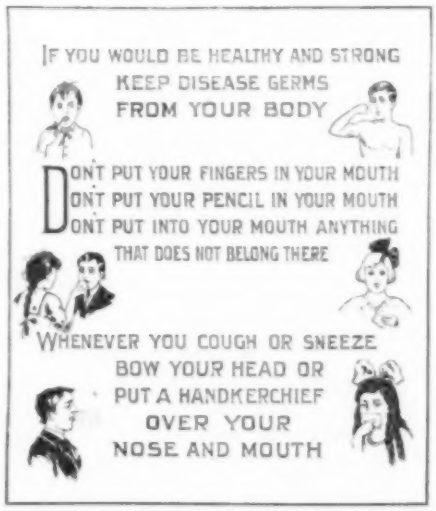
Vaccination properly done is not dangerous

Virginia State Board of Health

It then occurred to us that if tin could be substituted for pasteboard, more permanent results could be attained. Accordingly, the publicity agent of the board designed a series of six posters, covering the rudiments or farm sanitation and tuberculosis. Each of these was so lettered that the salient facts would stand out in large type, easily legible at thirty or forty feet. We had these lithographed and reproduced in black on thin sheet iron painted a lively orange color. Each placard is 9¾ by 13¾. The initial cost of the lithographed plates was $45 for the set of six and the cost per thousand thereafter was $22. As we have already used approximately 12,000 of these and still have the plates in excellent condition, the cost per placard has thus been only a little more than 2.6 cents. The work was well-done at these figures by the Richmond branch of the American Can Company.

As the placards are heavy, their distribution was something of a problem in itself. But we met this by having our hotel inspector, who travels in an automobile, placard the roads along which he passed and we shipped fresh supplies to him from place to place along his route so that he would not overload his car. A little later in the summer, we found two reliable medical students, who agreed to placard a large number of the main highways of the state for their traveling expenses and motor transportation. By giving them the use of a small touring car of popular make, we found the cost of distributing the signs very low. Through their efforts and those of the regular inspectors, together with the help of a few health officers in isolated districts, we have placarded most of the main roads of the Commonwealth and every one of the hundred county seats.

The results have been gratifying. Thanks to the material and workmanship, the placards


IF YOU WOULD BE HEALTHY AND STRONG
KEEP DISEASE GERMS
FROM YOUR BODY
DONT PUT YOUR FINGERS IN YOUR MOUTH
DONT PUT YOUR PENCIL IN YOUR MOUTH
DONT PUT INTO YOUR MOUTH ANYTHING
THAT DOES NOT BELONG THERE
WHENEVER YOU COUGH OR SNEEZE
BOW YOUR HEAD OR
PUT A HANDKERCHIEF
OVER YOUR
NOSE AND MOUTH

To the Teacher. Please post this card in a conspicuous place in your school-room where the pupils will see and read it. Please explain to the children why these rules are necessary; tell them how communicable diseases is spread by germs that come from the bodies of others and how it can be prevented if we keep germs away from our mouths and noses.

If you can get your pupils to practice these simple rules you will find a sharp decrease in the amount of sickness and in the consequent loss of time from school. A very good way of enforcing these rules is to have a heading "Personal Hygiene" on your daily record card to mark children for putting their fingers or pencils in their mouths, for careless sneezing and coughing, etc.

Very respectfully,

ENNION G. WILLIAMS,
State Health Commissioner.

BEWARE
MOSQUITOES!
They Breed in Stagnant or Slowly Running Water
and carry from the sick to the healthy the germs of Malaria, or "Chills and Fever."
FIGHT THEM
by draining or oiling stagnant water and by screening your house against them. If there is Malaria around, ask your doctor how to take quinine to prevent it.
For FREE INFORMATION About Malaria and Other Diseases
WRITE
THE STATE BOARD OF HEALTH,
RICHMOND, VIRGINIA.
POSTED BY ORDER OF THE STATE BOARD OF HEALTH—DO NOT REMOVE OR DEFACE

have remained unharmed in the vast majority of cases and have attracted much attention. One correspondent of the board went so far as to state in an unsolicited letter that he attributed the low morbidity from malaria in his district to the attention paid the warning of the placards by the people; and a legislator has offered to introduce a bill making it a misdemeanor for any person to tear down or deface one of the placards. Returning automobilists have often told us of seeing and reading the messages on the placards.

Taken as a whole, the experience of our board justifies us in calling this venture to the attention of other health authorities as another useful means to that constant publicity upon which the sanitary education of the people depends. To health authorities who wish to prepare such placards* as those we have been using, we shall be glad to send sample sets and to supply any information that may be possible.

*Pasteboard placards for posting in schools cost $61.92 for 15,000.

MARKET SANITATION.

The economic value of public markets is noticed by D. B. Armstrong, New York (*Journal American Medical Association*, January 13, 1917). He says it introduces into community life problems of sanitary and hygienic importance, which it has in common with the retail stores, but magnified by the concentration in a single area. The importance of inspection and public attention to these problems is evident, and he reviews the various methods which may be employed to meet them. These are the use of chemical and bacteriologic analyses in regard to the food stuffs sold and the municipal equipment should be so provided to meet these demands when plans for public markets are being developed. Cities will have to recognize in the future the necessity for standardization of food and calorific analyses will also be required. The importance of a living wage for the employees and their help can be met by periodic medical examinations, and a municipal laboratory equipment will have to be utilized. The city, if it maintains municipal markets, is under obligation of guaranteeing that food products shall be handled by individuals free from communicable disease. Suitable sanitary toilets and other facilities must be provided and food protected from animal contamination by at least a two-foot elevation from the floor. Receptacles with covers should be provided for rubbish and garbage, and arrangements made for their proper care. Adequate refrigeration is essential. The laws regarding spitting should be strictly enforced. Articles of food should be protected from flies and other contamination, and there should be efficient janitor service. Public markets under municipal control should take advantage of the use of placards, leaflets, etc., for the education of the public regarding the dangers of food infection by handling, coughing, etc. Adequate light and ventilation are essential. The floors should be waterproof and properly drained, and a plentiful water supply for flushing and other general purposes is absolutely necessary. The establishment of a market department or division in the municipal scheme is a valuable asset in meeting these requirements. The keynote of modern sanitation, especially food sanitation, is personal cleanliness in all who have to do with the functions of the market.

MICHIGAN'S PART IN THE WAR ON TUBERCULOSIS

ARNOLD MULDER,
Publicity Agent, Michigan Tuberculosis Survey, Holland, Mich.

THE states in which the governor and legislature look upon it as a legitimate function of government to combat the great preventable diseases are still so few that whenever a new one enters the lists to do battle, as a state, against the great destroyers, it is matter for rejoicing on the part of all who have the cause of public health at heart, wherever they may live. Whenever another state goes over to woman suffrage, suffrage leaders in states a thousand miles away congratulate themselves on the event, because they know that it means much more than the mere addition of a single state to their ranks; they know that the effect of each addition is cumulative and that when the wave shall have become strong enough it will carry everything before it. Similarly in the great public health movement in the United States, each new addition means more than what the face of things shows. Such entry of a state into ranks of commonwealths that are making public health one of the main functions of government is of interest not as an isolated phenomenon but as a part of a great social movement that future sociologists cannot help taking into serious account when describing the development of American civilization.

That is the reason why this brief account of the new state public health movement in Michigan may be of interest to the readers of this magazine. This state is at present in the thick of a tuberculosis survey which, public health leaders throughout the state believe, will help materially to hasten the day when the United States government will meet the menace of the white plague with something of the adequacy in which it is met in Germany for instance.

This is not by any means the beginning of the anti-tuberculosis movement in Michigan. As in practically all other states, the war on tuberculosis began with scattered skirmishes many years ago; and also as is the case in most states, it was for a long time largely private enterprise. All these scattered attempts to check the spread of the disease were finally focused in the State Anti-Tuberculosis Society, which has been doing excellent work for many years. The next step came when the 1915 legislature gave the fight against tuberculosis official recognition by appropriating $100,000 for a state wide tuberculosis survey, which work, under the direction of the State Board of Health, is now in full swing.

This bit of health legislation which has made it possible for Michigan to take a great stride forward was the result of a natural evolution through which most pieces of important legislation must pass. First there are the scattered individuals working for a cause; then whole communities become nuclei of influence and agitation; next there is organization and state wide team work; finally the lawmakers learn to understand the signs of the times and take the steps that are necessary to give the movement the stability and support that the backing of the powers of organized government alone can give.

When the legislature had passed the bill providing for this forward step and the governor had enthusiastically signed it, there was no plan of procedure suggested. The state merely provided the funds and told the State Board of Health to use the $100,000 as their best judgment should dictate, the only restriction being that the money was appropriated for the two-year period that marked the life of that legislature, $50,000 being appropriated for each year. Hence the present tuberculosis survey in Michigan will come to a close on May 31, 1917, two years after the date when the bill took effect. There were several ways open to the State Board of Health for making an effective campaign against tuberculosis, and most of the methods being followed elsewhere were given due attention. The system that was finally adopted contains nothing that is startlingly new, but the event is proving that it is well adapted to this state and that it is bringing real tangible results. The campaign in Michigan is of interest to anti-tuberculosis workers throughout the country if for no other reason than that it works. There is nothing so success-

ful as success—and few things so interesting. As one woman expressed it in a county where a State Board of Health tuberculosis survey was being held, "It has become the popular thing to go to the free tuberculosis clinics; the one thing I can urge for your way of appealing to the people is that it works."

First of all an organization was formed by the State Board of Health which at present is composed of the following, referred to usually as the "Health First" party because of the fact that the words "Health First" form the slogan of the campaign: a director of the survey, Dr. William De Kleine; a public speaker; a housing survey expert; twelve visiting nurses; a clinician; a publicity agent; several part-time diagnosticians who are used as the circumstances demand.

This party of health workers began active operations on October 1, 1915. The county was chosen as the unit of attack, the plan being to visit each of the eighty-three counties in the state before the close of the two years' survey. Usually three weeks are spent in each county, but frequently when counties are small, two are "covered" at the same time. A description of a sample survey in a county will give a clear idea of how the fight against tuberculosis is carried on in Michigan:

During the first week of the three weeks' survey nurses go into the county to pave the way. First of all they visit the local doctors. They give the physicians a clear idea of the scope of the work, how long the campaign will last, what is expected to be accomplished, and so on. The coöperation of the local doctor is looked upon as indispensable to the sucess of the work. Not only does he know where prospective patients are to be found and which family is likely to be most benefited by a free examination of its members, but the permanent effect of the work done by the state "Health First" party is dependent largely on how the local doctors take hold and keep up the fight after the state workers have passed on to another county. The nurses therefore attempt to arouse the interest of every doctor they can reach. In each town of any size they make arrangements with them for a series of free public clinics to be held in some centrally located building, such as the city hall or the courthouse. They ask the physicians to prepare lists of patients who in their opinion would be benefited by an examination for tuberculosis. They make arrangements with the doctors to come to these clinics and to take an active part in them. They show them that it will be distinctly worth while for them to be present during the several days while a tuberculosis diagnostician examines people and while he shows, much in the same way in which a professor lectures to a class of medical students, why a particular verdict is reached in each case.

The nurses during that first week moreover visit anti-tuberculosis societies and civic health societies and women's clubs and school and church organizations. They make an attempt to secure the intelligent coöperation of all these organizations in the coming campaign. By the aid of the doctors they draw up lists of persons who are suspected of having the disease or who are known to have been exposed to an open case. They visit the homes of many such persons and attempt to interest them in the survey with a view of getting them to come to the free public examinations the second week of the survey.

Hand in hand with the work of the advance nurses during the first week of the survey goes the work of the publicity agent whose duty it is to get into touch with the various sources of publicity in each community. First of all he visits the newspaper offices in the various towns. He explains to the editors the scope and purpose of the county campaign and tries to interest them in the work. He tries in each case to make the editor see that, aside from the good that will be accomplished, the survey is in reality a big news feature for the local papers. His aim is not first of all to get the papers to print a lot of scientific facts about tuberculosis, but rather, through regular news articles about the survey, to help to arouse so much public interest that, in the words of the lady quoted above, "it will become the popular thing to go to the free clinics." To this end he prepares articles covering every phase of the work, all written from the local paper's point of view, as if the survey were being covered by the paper's own staff of reporters. In addition to this he furnishes each paper with a series of educational articles in which the fundamentals of the disease are described in newspaper style—the causes, cure and prevention of tuberculosis, as well as the

scope of the disease, its bearing on society, its economic aspects, and so on.

In addition to that, the publicity agent gets into touch with the ministers of the community, with the manufacturers, with the mayors, school superintendents, chambers of commerce. Each minister is asked to announce the dates and places of the free clinics from his pulpit and to preach a sermon on tuberculosis. For such sermon a sermon outline is furnished which contains the fundamental facts about tuberculosis on which a Sunday discourse can be based by anyone who has not made a study of this particular subject. The manufacturers are requested to pick out such of their men as are physically run down and to let them visit the free clinics without cutting wages for time lost; moreover they are asked to do all they can to improve conditions under which the men must work. School superintendents are asked to have their teachers pick out such pupils as may need an examination and bring them to the public clinics. Mayors are requested to call a meeting of the council to which the public is invited and at which one of the party of health workers can give an address on public health needs of that particular community. Chambers of Commerce are asked to provide a similar opportunity for a public meeting. In towns where there are Rotary clubs or similar organizations, similar requests are made of them.

That about ends the work of the first week of the survey. The second week is known as free clinic week. Clinics are held during four or five days of the week in the principal towns of the county, the aim being to reach as nearly as possible every section. Usually three or four tuberculosis diagnosticians are at work at the same time in a county, because clinics are often held in three or four towns on the same day. From eight o'clock in the morning till five in the afternoon the clinicians examine the patients as they come to them in a steady stream. In each place where a free clinic is conducted three rooms are pressed into service—a waiting room, a dressing-room and a clinic room. The waiting room is presided over by nurses who take the temperatures of the patients, their personal and family histories of disease, etc. This record accompanies the patient into the clinic room. About the clinician, like a class of students in a college, are ranged the local

Dr. William De Kleine, Director of the Division of Tuberculosis of the Michigan State Board of Health, and Miss Mary E. Marshall, Superintendent of Nurses, examining a patient in Michigan's state wide fight against tuberculosis.

doctors, and each one is given full opportunity to study each subject that comes before them.

At the end of the clinic week the records of all positive cases are sent to the Secretary of the State Board of Health to be placed on file in the office in the regular way, the state law requiring the reporting by physicians of all cases of tuberculosis they treat. Moreover, records of all "positive" and "suspicious" cases are kept on separate slips for local use. Each patient examined is requested to place himself under the care of his own family doctor. Each doctor is furnished with the list of cases from his own practice examined by the state clinician and is given the findings in each case. This ends the second week of the survey.

The third week is known as "educational week." During this week the addresses are delivered for which arrangements were made by the nurses and the publicity agent during the first week of the survey. Talks are given in schools, in colleges, before civic bodies, literary

societies, women's clubs, church societies, etc. It is during this week also that the addresses are given before councils and boards of supervisors, chambers of commerce, Rotary clubs. At the sessions of the city and county governing bodies the necessity for action on the part of the local authorities is emphasized. The work done during the clinic week is reviewed and the lesson of the large number of cases that are invariably found is driven home. Attention is called to the necessary steps that must be taken to improve health conditions and to prevent the spread of the disease. Usually the need of one or more visiting nurses is urged upon the board of supervisors. The councils in the cities are told that they need a visiting nurse, a full time health officer, an adequately equipped laboratory, and both county and city authorities are told that each county should have a tuberculosis sanatorium.

In the talks in the schools, churches, before clubs and societies the fundamental facts in regard to sanitation and right living are usually emphasized. These talks are along broad lines and in them usually the building up of general health is advised as the best possible method of avoiding tuberculosis. The open window, wholesome food, rest, recreation, cleanliness, proper dress are most often featured.

During the final week of the survey, moreover, nurses go into the homes of the persons listed as "positive" and "suspicious" cases. They handle each case as to personal needs. The person afflicted with the disease is instructed as to how to take care of himself and what steps to take to get well. His family is instructed as to what they must do and what they must not do to guard themselves against infection. The nurses, in short, do all that can be done in a brief visit to make the victim of the disease and his family circle familiar with the needs of the situation and how to make an aggressive fight against tuberculosis.

This three weeks' survey in a county is followed by such judicious "follow-up work" as circumstances will allow or seem to demand. If as a result of the survey a county is for instance aroused to the necessity of erecting a tuberculosis sanatorium, the director does all he can to encourage such a movement. The publicity agent conducts a publicity campaign that has for its purpose the focusing of public opinion on this subject and perhaps nurses are sent to help the movement along by some more personal visits. Similarly when cities propose the erection of open air schools, or when counties seem to be ready for the appointment of county visiting nurses, or when a town gives signs of preparing to appoint a full time health officer, the state health commission gives all the encouragement and support it can give. Also along the line of "follow up work," the publicity agent keeps on supplying the newspapers with weekly stories about the disease and about the campaign against it.

"And does this plan of campaign work?" is a legitimate question. In view of what the State Board of Health is trying first of all to accomplish in the present survey, namely to locate the greatest possible number of cases of tuberculosis in the shortest possible time, the answer to this question will be found in the number of people who actually present themselves at the free clinics for a physical examination. If people are sufficiently aroused in any given community by the methods employed to take the time to have their physical condition looked into, then those methods stamp themselves as successful; if not, they might as well be abandoned, no matter how well they may look on paper.

As this is written, exactly one year has passed since the actual work of holding examinations was begun. During that time the "Health First" party has visited thirty-eight counties, and in those counties 11,528 persons have presented themselves for examination. Approximately 44 per cent. of this number have been diagnosed as victims of tuberculosis, very many of them in the earlier stages when cure is still easily possible. Often in a county, during a four days' series of free clinics, as many as six hundred or seven hundred persons present themselves for examination. At the present rate some 25,000 of the citizens of Michigan will have been examined for tuberculosis before the end of the two years' survey. Which figures speak for themselves in answer to the question, "Does it work?"

But a battle is not a war, and no one is more conscious of the fact that the present movement in Michigan is only a battle, than the State Board of Health and those who are actively engaged in the survey. When the survey was

begun the State Board of Health had no illusions about wiping out tuberculosis in Michigan. An enemy that has been entrenched for thousands of years is not to be conquered in two years. But Michigan in this survey hopes to make some little headway and to do some work that will have permanent results. To this end each community is told as forcibly as possible through public address, through the newspapers and in various other ways, that it must not look upon the present survey as anything final but that rather it must use the present survey to aid it in building up the defenses against preventable disease—that it must try to do, as a permanent function of the local government, what the State Board of Health is doing in the brief visit of the "Health First" party. The people of a community are told that each county needs a well organized full time health department, consisting of a full time health officer, two or three visiting nurses, a bacteriologist, a veterinarian, sanitary inspectors; it is told that it needs a laboratory, well equipped, for use of the health department, a tuberculosis sanatorium, fresh air schools, physicians are asked to organize systems of holding weekly free tuberculosis clinics like the ones conducted by the State Board of Health during the brief survey.

And is the survey proving successful in getting results of this more permanent nature? That is not as fair a question as the one in regard to the number of people who attend the clinics, or at least it is not as capable of a definite answer. Anyone who has ever done social propaganda work knows that it takes a long time to arouse large masses of people and that tangible results sometimes do not come until years after efforts are put forth. Even when the present survey shall have been concluded it will obviously be too early to estimate what the permanent results will be. It is not at all impossible or unlikely that ten years from now some community may vote to build a sanatorium or adopt the full time health department plan or appoint a corps of visiting nurses as a result of forces set in motion in the community by the present survey.

But even as early as this these more permanent results are not entirely absent. In two cities of the state, one with a population of some 40,000 and one with a population of about 10,000, full time health departments have been organized as a result of the survey. In three or four cities fresh air schools have been established, and in several other places work is going forward for similar schools. In eighteen counties the erection of tuberculosis sanatoriums is being strongly agitated, and in at least one county the matter has gone far enough so that the project came up for a vote of the people and was carried

But the best permanent result which it is hoped the survey will have is to arouse in the mind of the people of the state a vivid consciousness that tuberculosis is not an isolated phenomenon but that it is closely tied up with most of the other great preventable diseases—to make people see that what is done to prevent tuberculosis is done to prevent many of the other great diseases, and what is done to prevent many of the other great diseases is done to prevent tuberculosis. It is estimated that from 8,000 to 10,000 persons die in Michigan each year as a result of preventable disease. And that Michigan is not alone in this is shown by the statement of another reliable statistician that there are in the United States each year 600,000 deaths as a result of disease that could be prevented. The present tuberculosis survey in Michigan aims, in addition to tracking down all the cases of tuberculosis that can be found, to give the public a poignant sense of the essential solidarity of the forces of disease and the urgent necessity of solidarity on the part of the forces of health in order to meet the combined menace of the great preventable maladies.

Hence Michigan, in these county tuberculosis surveys, does not specifically lay the greatest stress on the necessity of a community erecting a tuberculosis sanatorium (although that is strongly urged in each county), but rather on the necessity of each county and each city organizing an adequate full time health department. In these days of preparedness agitation it is comparatively simple to create in the mind of the public a concept of preparedness against disease that will be something more than mere generalization. And that is what the Michigan State Board of Health is aiming at—complete preparedness against disease in each community in the state, believing that such a system of preparedness will be the very best way of permanently coping with the tuberculosis problem.

Received for publication, September 1, 1916.

EDUCATIONAL WORK OF THE BROOKLYN ANTI-TUBERCULOSIS COMMITTEE

HESTER D. JENKINS, PH.D.,
Educational Supervisor, Committee for the Study and Prevention of Tuberculosis, Bureau of Charities, Brooklyn, New York.

A GREAT deal of work with children is done by the Committee for the Study and Prevention of Tuberculosis of the Brooklyn Bureau of Charities, for it is both important and promising. The children of the poor are generally more progressive and better educated than their parents, if for no other reason than that the public schools are far better than they were a generation ago. And when the children are born of immigrant parents, who came to this country with very little notion of health or hygiene, they must not only learn to live from people outside of their homes, but furthermore the homes need all the enlightment that the children can bring into them.

Educational work among children awakens immediate if only passing response. Their interest is so easily aroused that if one but remembers that they are children and not scientists, the real problem is not how to interest them but how to make the impression lasting and how to translate it into mental response and action.

The plan of campaign in schools is the following. When permission has been obtained to speak at a regular assembly, the supervisor chooses some one or two simple ideas bearing directly on the prevention of tuberculosis, such as the importance of cold water for drinking and bathing, or the need of fresh air, or the danger in spitting, coughing and sneezing, and talks from ten to twenty minutes on this theme, giving the physiological reason for the habit she is trying to inculcate, brightening the talk by illustration and anecdote, and always ending with careful details and practical advice. The spit, sneeze and cough campaign is prefaced by a careful account of the germ theory of tuberculosis, and followed by practical directions.

Often the children are questioned to see whether they have received the idea, and generally they are asked to promise that they will sleep with their windows open that night, or take a cold bath the next morning, or whatever the object of the talk might have been. The teachers are asked to inquire the next day how many have done this. In one school the pupils were given five minutes in which to talk among themselves about the lecture. In several schools the talk has been the subject of compositions, and I have been pleased and surprised to learn how intelligently the boys and girls will report of the talk. Another plan is for the principal to add to the talk of the expert comments of his own.

Then little hand-bills are given to the children to take home, and they are urged to tell their parents what they have learned. We have cards or hand-bills on Fresh Air, Cold Water, Don't Spit and Swat the Fly, and attractive posters on Fresh Air and Cold Water.

In getting out one of our most successful posters, we attempted not only to be instructive but also to inspire through a picture a real desire for fresh air. This we did by selecting a beautifully colored picture called, "On a Pinacle," painted by Mr. Curran, and reproducing this in colors by his kind permission. The picture alone irrespective of the letter press makes one draw a long breath and feel the joy of fresh air. It has been a distinct health agency and requests have been received for it from all over the country.

We have slides to illustrate the talks on occasion, and we use the moving picture stories of tuberculosis in the motion theatres and occasionally in Christian Associations or settlements. This always attracts the children, but

I am not sure that it teaches them so much as the talks do; it is however, valuable as deepening the impression already made.

A year ago we got out a miniature exhibit especially for children. We had used the regular exhibit of the National Association for the Study and Prevention of Tuberculosis, but felt that one directly adapted to children, and incidentally to our Brooklyn work would have many advantages over the other. The plan was to have the ideas as few and simple as possible and to group all the subordinate matter around it. Then we made our exhibit pretty, having a buff background and a sepia frame and the pictures attractive and in a few cases colored. The upper half of the screen was headed with these words

THE BROOKLYN COMMITTEE
on the
PREVENTION OF TUBERCULOSIS
SAVES CHILDREN
from Death and Tuberculosis.

and under it are large photographs of the Medford Sanatarium, the Day Camp Rutherford, a fresh air class for anemic children in a public school, a school lunch, and a visit from a district nurse. This half of the screen also contains a few central facts about tuberculosis.

The lower half of the screen was headed

WHAT YOU CHILDREN CAN DO
TO PROTECT YOURSELVES
FROM CONSUMPTION,

and contained small sections sometimes with pictures and sometimes with advice only, such as, Keep Clean, Keep Well, Love Fresh Air, Go to Bed Early, Learn to Choose Nourishing Food, Keep out of Doors, ecetera. This advice was either illustrated in picture or amplified in print.

This exhibit has been placed in schools, churches, empty stores and other prominent places. When it is placed in a school, it is usually after the supervisor has given a health talk, so that it is one of the ways of driving in the impression made by an address.

Still another educational effort in the schools was made through the Brooklyn Bureau of Safety which is connected with the Brooklyn Rapid Transit Company. They have been placing on the bulletin boards of many of the public schools weekly "safety" bulletins. Persuading them that health was a branch of safety, we obtained from them permission to write six of the weekly bulletins on subjects connected with tuberculosis and fitted to the especial season in which they appeared. For instance, a Thanksgiving bulletin expressed thanks for the health intelligence that teachers and others now give the children, and gave some fundamental facts about tuberculosis; a January bulletin made a New Year's Resolution not to spread tuberculosis by carelessly sneezing, coughing or spitting; and a spring bulletin called for warfare against the fly.

A recent development in our department has been the short playlet, to be acted by the children themselves. This idea was not original with us, but the Brooklyn Committee was the first to publish a volume of such playlets and the first to put them into general use.

When I was running a fresh air campaign most vigorously in Brooklyn with literature, posters, talks and newspaper publicity, I wrote our first playlet called "Judith and Ariel." The theme was the sick girl Judith who was tortured by Headache, Cold and Weariness until the Nurse and the Boy Scout opened the window letting in Ariel with her train.

This playlet was received with so much eagerness by several settlements where children presented it, that others were written, one on "Our Friends the Foods," one on health in general, called "Mother Goose Up-to-Date" and a fourth called "In a Tenement." Later "Baby's Godmothers" was written for Baby Week.

These playlets may be acted in ten or fifteen minutes, and require no scenery; the costumes may be as simple or as elaborate as desired. They have been presented in the regular assembly hour in many of the Brooklyn and Manhattan Schools. Several of them combined with some music and perhaps a talk with or without slides makes a good entertainment for a church or settlement, and interests the parents as well as the children. These playlets have sold all over the country until now there is scarcely

a state in the Union that has not sent for copies of them. I think they convey the idea clearly, too obviously for a literary adult, but not too plainly for children. Our latest playlet, "In the Forest of Arden," is intended for somewhat older boys and girls, and is more general in its teaching.

In addition to its general educational work, the Anti-Tuberculosis Committee gives special and intensive education to the children whom it has directly under its care. These children are the twenty-five in the sanatorium at Medford, Long Island, who are in the early stages of tuberculosis, the fifty or more in the Day Camp Rutherford, and the anemic children in the fresh air classes of the public schools, which were originally organized in Brooklyn by the committee, who still maintain a supervisor and furnishes milk and crackers.

At Medford, the children are taught hygiene and useful work and attend a little branch of the public schools. In the fresh air classes, in addition to their regular courses, the children have special exercises and training in breathing, and are taught healthful living.

The Day Camp does the most in this line. There are two regular classes forming an annex to P. S. No. 17, and in addition the children have classes in cobbling and sewing to fit them to help themselves at home, and a special instructor in corrective gymnastics and breathing exercises. The superintendent has ardent ideals of teaching the children how to keep well and how to live cleanly and comfortably. Her work is further impressed by a social service nurse who has recently been attached to the camp to follow up cases in the home and deepen the educational work done by the institution.

Received for publication, October 19, 1916.

A FAR REACHING FACTOR.

You may think you can fence off some one phase of factory management and treat it as an independent problem but it won't stay within the enclosure you have built for it.

Take the safety-first movement. Its influence for good factory management is far-reaching. For instance, in these days of labor shortage the manufacturer who has developed a "safe and sane" sandblast method is glad of it for he finds it easier to get men for this ever-detested job.

That's only one way in which safety as a problem leaps its boundary of safe-guards and accident prevention education. Here's another. A recent item in the *National Underwriter* reads like this:

"Fire insurance companies, to a great extent, are now watching the credit of concerns in states where there are workmen's compensation acts, and especially where these are drastic. Fire companies, in passing on a risk, want to know whether the assured carries workmen's compensation insurance, as it is an important element in credit when it comes to writing fire insurance. Where a concern does not carry compensation insurance, it is liable to have a heavy loss and thus a moral hazard may be introduced. One of the companies speaks as follows: 'In our credit statement forms, as well as credit investigations, cognizance of this matter must be taken, and also credit grantors should be prepared to inform their customers on the main points of the compensation laws bearing upon their business.'"

Few management problems will stay "fenced in."—*Factory*, February.

DESIGNS FOR PRIVIES.

RICHARD MESSER,
Richmond, Va.

Read before the Public Health Administration and Sanitary Engineering Sections, American Public Health Association, Rochester, N. Y., September 7, 1915.

THE proper disposal of human excreta in rural communities is still one of the most serious problems with which a state or municipal health department has to deal, a large percentage of the population being dependent on privies of one kind or another. Although the privy problem is important the world over, it is of special interest in our southern states in which the fly season is longer and in which are extensive areas of hookworm infection. The relation between summer typhoid and improper disposal of excreta is too well known to need further discussion. Concerning hookworm, the efforts of the International Health Commission are being directed almost exclusively towards educating the rural people to the need of sanitary conveniences in order to prevent the spreading of human filth.

During the past twenty years or more, sanitarians have been trying to devise a simple, practical and at the same time inexpensive type of privy. Various types have been suggested and adopted from time to time, but experience has shown that each has certain disadvantages. Opinions as to the relative merits of the type best adaptable to general use vary. For instance, it is found that one state department of health may advise against the type of privy recommended in the adjoining state with similar geological, climatic and rural conditions. That the problem needs further study is clearly evident, for upon its satisfactory solution depends the eradication of fly-borne typhoid fever and hookworm infection.

To bring about further discussion, the writer has endeavored to incorporate in this brief paper a description of all known types of so-called sanitary privies with remarks as to the advantages and disadvantages of each.

The sanitary privy is, first of all, the best substitute for a modern water-closet connected with a sewer. Whatever the type, it must comprise some kind of water-proof receptacle for the stools and urine and some kind of house or room in which the calls of nature may be responded to with privacy and convenience. The principal object is to prevent the spread of disease by the dissemination of germs contained in human filth either by the contamination of a drinking water supply or by its transmission to foods through the agency of flies, insects or animals. In addition, the contents must be capable of removal with as little trouble as possible, objectionable odors must be reduced to a minimum by proper ventilation and, finally, the cost of the entire structure must be as low as practicable. In general, all types come under two main classes—

the so-called "dry system" and the so-called "wet system." For convenience they may be listed as follows:

1. Dry System:
   (a) Vault type, water-tight.
   (b) Pit type, non-water-tight.
   (c) Removable receptacle type, water-tight.
2. Wet System:
   (a) Liquefying tank type.
   (b) Chemical closet.

Privy House.

The general features of the construction of the privy house proper are to all practical purposes the same for all types of privy. It is designed to accomplish three objects: (1) To guard the receptacle against flies; (2) to give protection against weather; and (3) to reduce nuisances to a minimum by means of proper ventilation. This last is of special importance in warm climates. A substantially built, plain and simple structure is all that is required, one that can be built by any practical man with the least expenditure for materials. Simplicity in design and economy in construction are two very important points in connection with a type recommended for general use. In the diagram is shown a view of a suitable house, which in general outline and finish is practically the same as shown in the bulletin issued by the United States Public Health Service. It has the usual self-closing seat, the screened ventilator opening near the top, the water-tight, overhanging roof and is made as nearly fly-proof as possible by a self-closing door and laths over the joints. Special attention is called to the shaft ventilator extending from the seat up through the roof, which is a decided improvement over the screened openings at the sides shown in most designs which have appeared in public health bulletins for a number of years. Objections to the use of screened openings are (1) failure to provide adequate ventilation, (2) receptacle chamber is not kept dark, (3) the screens soon rust out or are kicked out. The shaft may be built of lumber or may consist of pipe.

FRONT VIEW

PRIVY HOUSE

Vault Type.

This is one of the older styles of privy, but is still used in many places, especially in northern cities. It consists of the usual privy house with a masonry, brick or concrete vault under the seat. Vaults vary in shape and

dimensions, but as a rule are comparatively shallow but large enough to hold several months' accumulation. In cleaning, the contents are removed with a shovel through an opening in the rear. Flies and animals are excluded by a hinged door or suitable cover. Dry, pulverized earth, ashes or air-slaked lime is generally used as a deodorizer, from which comes the name "earth closet." In liberal quantities, earth renders the night soil much less offensive, especially during removal, and to some extent it keeps away flies. A serious disadvantage is due to the possibility of flies breeding in the semi-moist material. Another danger is from the possible development of hookworm embryos in the vault and later infection of the soil with the contents as the material being inoffensive may not be buried deep enough to prevent hookworms in the infective stage from reaching the ground surface. In warm climates, the use of earth with this style of privy is absolutely imperative.

Pit Privy.

This style of privy is a radical departure from the water-tight receptacle privy. Experience in poor rural districts has shown the necessity of reducing the cost of construction and maintenance to a minimum before any material progress can be made. The pit privy consists of a substantial house set over an excavation or hole in the ground. As soon as this hole gets about two-thirds full, the house is removed to a new pit and the first is carefully covered with earth. The pit is usually dug to a depth of three or four feet, sometimes deeper, and lined with boards to prevent the caving in of the sides. After the house is set in place, earth is banked around the rear and sides to keep out flies and surface water. Since it is specially important that the pit be kept dark, ventilation is provided by a pipe or shaft.

PIT PRIVY

Since there is danger from seepage reaching a ground water supply, there are certain limitations which govern the location of the pit, namely: it must be placed a safe distance from a well or spring and on ground which is lower and it must not be located directly over a limestone formation. As to a safe distance, this depends altogether on the kind of soil or rock formation. For instance, natural filtration through a sandy soil would render the seepage harmless in a comparatively short distance while in a loose rock or coarse

gravel stratum, the pollution might travel several hundred feet. It is specially dangerous where there are any faults or crevices, which are often present, and passageways left by rotten tree roots.

These remarks apply particularly to dug wells as properly cased, deep drilled wells are not usually subject to contamination from the ground surface. Therefore, there may be a difference of opinion whether a minimum distance of 100, 200 or more feet should be specified. It would seem best that every individual case be passed on by a responsible health officer. It is the opinion of the writer that pit privies are very undesirable in communities where people depend on shallow wells; in fact, a well with several of these privies within a radius of 100 to 200 feet would be viewed with suspicion.

In limestone regions, it is impossible to tell how far pollution may reach. From a sanitary standpoint, it would seem a better policy to destroy disease germs on the premises rather than turn them loose with the possibility of their reaching a spring several miles away. The breeding of flies in the pit is also an objection which has been brought against this type of privy. Although the writer has not investigated this matter, it would seem that the moist material would offer an ideal breeding place.

Will the privy be moved at the proper time or will the owner wait until the contents become so offensive that he will be forced to secure a new site. The writer is inclined to believe that the latter will be the case in most instances unless, perhaps, there is regular inspection by a health officer. Probable failure to carry out this recommendation would seem an objection to recommending the general adoption of the pit privy.

In mining camps and mill communities, having foreign populations, the pit privy is often the best type to recommend on account of its low first cost and ease of maintenance, provided, however, that a safe water supply is furnished by the company, through a pipe system, as is usually the case.

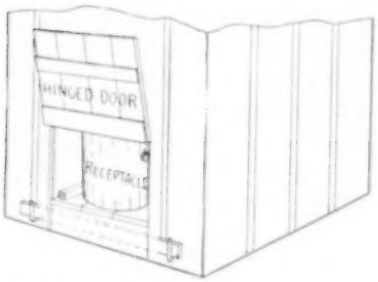
Removable Receptacle Type.

This consists of a substantial privy house with a fly-proof compartment underneath the seat in which is placed a water-tight receptacle, either a wooden box, barrel, galvanized can or some sort of tub which must be accessible for removal and cleaning. This type is the one most frequently described during the past ten years under the name of "dry closet," "dry earth closet" and "Stiles closet," the latter having a pail or bucket receptacle, and is specified in the health ordinances of many towns and cities of the South.

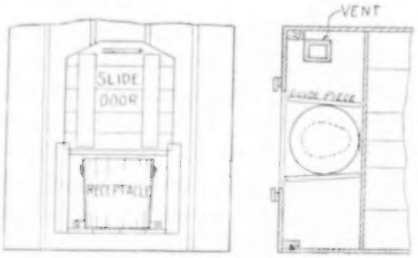
A galvanized can, about sixteen inches in diameter and sixteen inches high, fitting close up underneath the seat, is the best kind of receptacle although a wooden bucket, tub or lard pail is almost as good. Any of these should be provided with handles and be held in place by guide pieces nailed to the floor. Too often no mention is made of the latter in the specifications. Wooden boxes are unsatisfactory for they soon become leaky due to warping, are too heavy to handle and hold

excreta long enough to permit the breeding of flies.

To keep flies away from the receptacle is a difficult matter. The hinged door at the rear, being exposed to



PAIL PRIVY



REAR VIEW PLAN

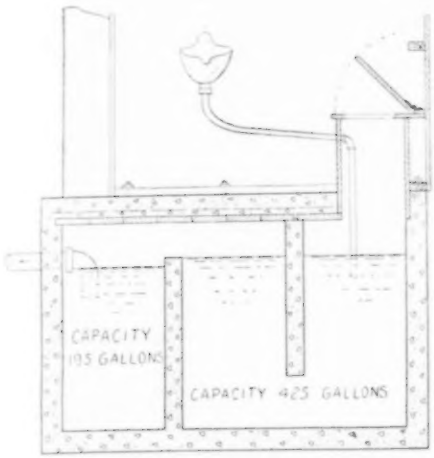
weather, soon warps, leaving openings around the edges, the self-closing seat cover fails to operate properly due to rusty hinges and the front door is seldom kept closed. The objection to screened ventilator openings, described in the bulletins of the United States Public Health Service, has already been mentioned.

The can or bucket receptacle requires frequent and regular cleaning—in summer at least once each week and about every two or three weeks in winter. The lack of proper attention in regard to cleaning is perhaps the principal drawback to this style of privy and one which makes it practically a failure for general use. In towns it is becoming more and more difficult to find anyone willing to do this kind of work and in rural districts the privy is usually neglected. Objectionable odors during warm weather is a complaint often heard although these can be reduced somewhat by the use of dry earth and the shaft ventilator. That the pail system has not proved entirely satisfactory for the average rural conditions is generally admitted, although there are a number of sanitarians who believe that a better method has not been found.

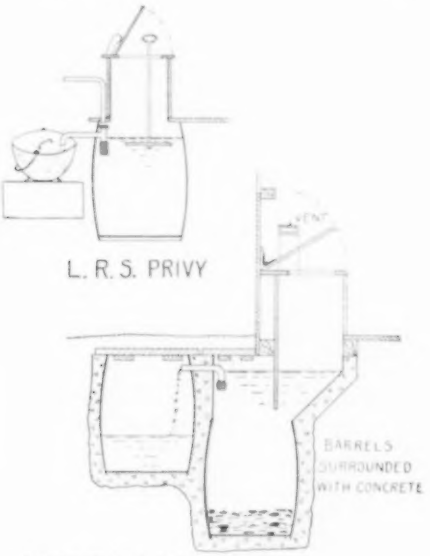
Liquefying Tank Type.

The L. R. S. Privy, based on the experimental work by Lumsden, Roberts and Stiles in 1910, marks the beginning of the wet method of disposal. The details of the method of operation are too well known to need description. Since then, various modifications, of which the Kentucky Privy is a notable example, comprising concrete tanks instead of barrels, have been adopted.

The principle of operation by which the feces and paper are liquefied in the receiving tank is practically the same for all. The advantages claimed for this closet are briefly as follows: (1) the breeding of flies in the tanks eliminated; (2) liquid effluent less objectionable and easier to handle than night soil; (3) cost of cleaning less because effluent tank may be built to hold two or three months' accumulation, and (4) odors are reduced to a minimum. Experience so far has shown that the above are borne out in practice. On



KENTUCKY PRIVY



MODIFIED L.R.S. PRIVY

the other hand, there is the disadvantage of the high first cost of installation, especially for concrete tanks. For this reason it has seemed a hopeless undertaking to bring about the general adoption of this style of privy in rural communities.

The so-called "anti-splasher" shown in the L. R. S. design is not needed when the water level is two feet or more below the seat. Concerning disinfection of the effluent, chemicals should be used. Boiling, of course, is absolutely impracticable. One can well imagine the farmer going to the trouble of boiling a kettle full of liquefied excreta so as to prevent the pollution of the soil in his garden. Such a recommendation will tend to cast discredit on a really good type of privy.

The Kentucky Privy differs from the L. R. S. in that the tanks are made much larger and the final effluent is disposed of by means of subsoil piping. The capacity of the liquefying tank is about 425 gallons and of the effluent tank about 195 gallons. With this long period of storage, it is thought that typhoid and similar organisms will die before reaching the outlet. That the privy is sanitary there can be no question, but, for general use, the expense of building seems prohibitive.

The Chemical Closet.

This type is different from all the others in that it may be located inside the dwelling. It consists of a cabinet with a self-closing seat, inside of which is a galvanized or metal receptacle. Odors are carried away through a vent connected with the chimney or a special stack and the contents are disinfected with some kind of coal tar liquid preparation. The various types advertised by the several commercial companies are all patented. There is no question that the chemical closet

meets sanitary requirements, but most of the styles offered are too expensive. The idea of having excreta stored inside the dwelling for a month or two is also distasteful to a great many people.

Costs.

It is impossible to give any accurate figures relating to costs of privies as conditions and price of materials vary for different localities. However, for the purpose of comparison, the following approximate estimates are given, based on average prices for labor and materials:

TABLE SHOWING ESTIMATED COSTS OF VARIOUS TYPES OF ONE-SEATED PRIVIES.

(Cost of house in each case assumed at $12.50 and separate from cost of materials and labor for the receptacle, vault, tank, etc.)

Type.	Receptacle, vault, tank, etc.		House.	Structure complete.
	Materials.	Labor.		
Vault	$3.00	$2.50	$12.50	$18.00
Pit	0.50	1.50	12.50	14.50
Receptacle	1.00	1.50	12.50	15.00
L. R. S.	3.00	2.00	12.50	17.50
*Z	6.00	5.50	12.50	24.00
Kentucky	20.00	12.00	12.50	44.50
Chemical	.....	.....	.....	$22.00 to $40.00

*Suggested design for L. R. S. privy with barrels enclosed in concrete.

Conclusions.

Which type of privy is the best to recommend for a community depends a great deal on the local conditions and, in particular, on how much money the people can be persuaded to spend for sanitary improvements. This question of first cost is the principal difficulty and cannot be eliminated, hence the necessity of sometimes recommending a cheap privy, the pit privy for example, as a compromise. From a sanitary viewpoint, the writer believes that some modification of the L. R. S. wet closet is the most satisfactory that has yet been suggested and, furthermore, the additional expense of building is more than offset by permanency and small cost of maintenance. That the problem is far from being satisfactorily solved is clearly evident.

HUNTERIAN LABORATORY OPENED.

The Hunterian Laboratory of Johns Hopkins Medical School, the dream of the foremost physicians and surgeons of Johns Hopkins Hospital years ago, has been completed and is now formally opened. The building cost about $115,000. Its erection was made possible through the munificence of the Rockefeller Foundation. The scientific equipment alone cost many thousands of dollars. The purpose of the laboratory is to facilitate the work of the men engaged in the highest form of research work. Tunnels connect the laboratory with the medical school and the physiologic building. On the first floor are the medical library and the department of art as applied to medicine. Work at the laboratory is directed by a committee of professors and instructors of the medical school. Dr. Milton C. Winternitz is chairman of the committee, and has a laboratory on the fourth floor. The second floor has been leased to the Carnegie Embryological Institute. The third floor will be devoted to work in clinical medicine and children's diseases. The pathologic department will be located on the fourth floor.—*Exchange.*

Book Reviews.

Water Supply. *By William P. Mason. Fourth Edition. New York: John Wiley and Sons. X+528 pp. 6/9. $3.75 net (16s -).*

The fourth edition of Professor Mason's well-known book on Water Supply testifies to the high esteem in which this book is held by the American engineering public. Published originally in 1896 it has passed through subsequent editions each time being substantially enlarged and improved. For the present edition a large amount of the text has been entirely rewritten and a suitable amount of new material added. The tables have been brought up to date and new photographs introduced. Some of the most noticeable changes are the following:

The chapter on Drinking Water and Disease has been strengthened by the addition of many pages devoted to typhoid fever. The work of recent years is drawn upon to set forth present day conceptions in regard to the existence of the typhoid bacillus outside its human host and in "carriers." The distribution of the disease and factors operating in its transmission are also discussed. Considerable material has been withdrawn from this edition relative to the now discredited theory of water-borne malaria.

Newly developed methods of water purification, particularly processes aiming at disinfection, come in for consideration, as do certain newly found factors influencing natural purification in streams and stored waters. The use of chlorine, ozone, ultraviolet light and copper sulphate receive attention. There is considerable discussion of various phases of the pollution of drinking water supplies and the care of watersheds.

Revisions and additions appear frequently throughout the chapters dealing with ground water and with the corrosive action of water. The appendices deal with entirely new subjects and are brief.

Professor Mason is always a pleasing writer and has the art of abstracting the important data from the writings of others and presenting them in an attractive form. Although this cannot be called an exhaustive treatment of the subject it is one of the most interesting and suggestive treatises on water supplies published since the old book of the same title by Professor William Ripley Nichols of the Massachusetts Institute of Technology.

George C. Whipple.

Fight for Food. *By Leon A. Congdon, M. S. J. B. Lippincott Co., Philadelphia and London, 1916. Price, $1.25 net.*

This book deals in a popular manner with various problems concerning food, food laws, and food adulteration. The author is in charge of the food and drug work of the Kansas State Board of Health, and was formerly employed as chemist by the states of New Jersey and North Dakota. He is, therefore, in a position to speak authoritatively upon this subject.

The chapter upon "The Enforcement of the Food and Drugs Act" is well worth the price of the book. The author has carefully looked up the status of food inspection in each state, and also by the Federal Government. These laws are enforced by Boards of Agriculture, by Agricultural Experiment Stations, by State Boards of Health, and by more or less independent State Food Commissions, as well as by the United States Department of Agriculture. The terms "Adulteration" and "Misbranding" are carefully defined and examples of adulteration and misbranding are stated. The question of color and bleaching is taken up, the author being of the opinion that eventually this form of treatment will cease, as such treatment is not necessary and is done only to improve the appearance of the articles.

The influence of food and drugs upon health is taken up, particularly upon the sanitary condition under which they are made and handled. In a similar manner the sanitary handling of milk is treated, and the sanitary handling of foods in the home.

The chapter on Rural Sanitation treats of the advantages of living in the country, but also speaks of the disadvantages, through unsanitary conditions, and recommends methods for im-

proving these conditions by proper sewage disposal, carefulness in the dairy, and other precautions of a general nature, which, if carried out, will prevent the transmission of such diseases as trichinosis, tapeworm, malaria, tetanus, dysentery, typhoid fever, and tuberculosis.

The chapters on Food Economy, the High Cost of Living, and Remedies, are largely of an economic interest. The author is of the opinion that the country is in need of "Regulation of Trusts" laws. He states that "large cold storage plants are wonderful and truly economical institutions; but not for the public consumer if the so-called alleged 'interests' use them to advance prices on food necessities which are held until the market price can be inflated."

The book contains an interesting chapter on Flavor and Grading Food Products. The author is of the opinion, however, that some grades of food products need revision. The book closes with a chapter on Added Poisons and Drugs in Our Food. In this chapter the author speaks of such substances as alum, copper, nitrous acid, chlorine, saccharin, benzoic acid, sulphites, tartaric acid, and boric acid. The author is of the opinion that these chemicals which may normally occur in foods were not placed there by the Creator for the purpose of being extracted and added to other food stuffs.

Hermann C. Lythgoe.

Health Department Reports and Notes.

REPORTS.

Wilmington and New Hanover County, North Carolina.

To have a definite goal for your year's work, and as the year comes to a close to realize that the results of your work have equalled your greatest hopes, must be the experience of Mr. Charles T. Nesbitt, health officer of this territory, as described in the report of the splendid results accomplished by this health department for the year 1916. "From the North East River to Federal Point, and from the Cape Fear to the Sea—City, Suburb, Village and Farm—we are one people, striving for healthful and useful living." Such is the goal, and the remarkable advance in improved sanitation, since 1911 when active public health work was inaugurated, to the present day, is ample evidence that such a motto is not in vain.

In the city of Wilmington, about which this district centers, the 1916 total death-rate per 1,000 population, residents only, was 13.6, of which the white rate was 9.7 and the black, 18.3. Think of a colored death-rate in a southern city of population of 32,473, over 40 per cent. of which is black, of 18.3. The low general death-rate of 13.6 is even more commendable when we consider that the 1915 death-rates of the cities of Richmond, Va., and Savannah, Ga., were 18.89 and 19.39 respectively. The death-rate for the whole county was 14.2, giving a general rural death-rate of 17.1, which is highly commendable, since it is acknowledged that rural work is much slower than that of the city. The following tables shows well the steady and well sustained decrease in deaths since 1911.

Year.	*White.*	*Black.*	*Total.*
1911.....	19.94	34.78	29.43
1912.....	14.99	28.55	21.46
1913.....	13.30	24.94	19.
1914.....	12.27	25.80	18.62
1915.....	11.1	22.8	16.4
1916.....	9.7	18.3	13.6

Death-rates of infants under five years in Wilmington were 409.9 per 100,000 of the whole population, a reduction of 246 per 100,000 since 1912. A further interesting table, highly descriptive of the effectiveness of this health campaign, is that which shows the percentage of the total number of deaths which are preventable through public health work, including pneumonia and pellagra. From this table it is seen that in 1911, 54.16 per cent. of deaths were due to this class of causes; in 1916, 30.47 per cent. Typhoid fever shows an extensive, though

somewhat erratic decrease since the rate of 100 per 100,000 in 1911; the 1916 death-rate being 12.3. The death-rate from enterico-colitis in Wilmington has been steadily cut down from 411.6 in 1911 to 73.8 in 1916, the greatest decrease being for 1915, when the rate was cut down from 220 to 80.

The reported death-rate from malaria, which in 1911 and 1912 caused a death-rate of 43 per 100,000, was 3.08 for the city, and 5.2 for the county as a whole. Pneumonia gave a death-rate of 138.5, which, with the exception of 1915, shows a marked reduction since 1911. Tuberculosis, which is the largest problem confronting this department, gave a city death-rate of 129.3 per 100,000, of which the white rate was 56.4, and the black, 217.17. The rate of the entire county was 153.5, a white rate of 62.5, and a black rate of 260.2. The death-rate in Wilmington in 1911 was 244.67. Smallpox has not appeared in this district since 1914, though the disease is still somewhat prevalent in surrounding territory. No deaths have occurred during the year from diphtheria, scarlet fever, measles, whooping-cough, and infantile paralysis. As an indication to the improvement in sanitary conditions, other than the extensive decrease in mortality, is the fact that the third inspection made by the U. S. Public Health Service for the purpose of grading the rural sanitation of Cape Fear township, made this last December, showed an increase of 33 per cent. in their rural sanitary index of 1915.

School and infant-welfare nurses have accomplished excellent results, both in the city and rural communities. Furthermore a volunteer medical inspection service was begun at the beginning of the present school session, which, though still in its infancy, promises success.

The approval and support of the people in this enterprise is well demonstrated by the fact that the public is continually increasing its demands, which the department is using every effort to meet, though the present force and appropriation seem to make this increasingly difficult. There can be no better proof of the efficacy and desirability of the continuance of this excellent health service than this report, brief though it is, and it is sincerely to be hoped that this progressive movement will not be fettered by false economy, resulting in either decreased appropriation or decrease in staff, particularly since the present facilities seem hardly sufficient.

Much county health work in the past has been little else but the name. Yet here we have a most instructive example of what can be accomplished in a county, and ample proof of the value of the full-time county health officer. That such improved records also occur among a population largely colored, give proof to the fact that modern health methods applied to the colored race will improve their health considerably. The report as a whole, though without many of the details characteristic of the larger city reports, is presented in a way that can not fail to show the public the extent of the improvement of their own health, and consequently should stimulate greater interest in the activity and further improvement of their health department.

Washington, D. C.

The recent report of the health officer of the District of Columbia, Dr. William C. Woodward, not only represents the record for public health during 1915, but also for the first six months of 1916.

Previous to 1915 there had been a constant dimunition in the death-rate since 1896, but from some unknown causes this continued decrease was not sustained during the year recorded, in fact the rate was considerably increased. In 1915 deaths numbered 6,505 as against 5,866 in 1914, with the corresponding death-rates of 18.18 and 16.59 per 1,000 population. This rate was based on the census of November 1, 1915, which showed a population of 357,749, strangely enough, an increase of only 3,787 since April 28, 1913.

Careful inquiry failed to show any cause for such an increase. The colored and white death-rates increased in nearly the same proportion, the former from 24.31 to 26.18, the latter from 13.64 to 15.13. The colored population is about two sevenths of the total population. The increase, further, was not limited to any age-group. Death-rate in the first year of life increased from 100 to 110 per 1,000 reported births. The most

conspicuous feature of the year's extraordinary record is the increase in reported deaths from the so-called diseases of middle and advanced life. Deaths from diseases of the heart increased from 757 to 853; from chronic inflammation of the kidneys, 51 to 77; from apoplexy, 419 to 457; from arteriosclerosis, 143 to 154. Among the acute diseases, pneumonia showed the most conspicuous increase, from 468 deaths in 1914 to 671 in 1915. Deaths in tuberculosis increased from 611 to 698. Deaths from communicable diseases did not vary greatly from the preceding year. There was also an increase in deaths from external causes. It is obvious that such a general increase as recorded, particularly in view of the fact that in no other city, so far as has been observed, has there been any similar increase in the death-rate, must be due to some discrepancy in either the vital statistical records or in the census, and the very slight population increment between the dates recorded seem to point to the fact that it is there the error must be. Doctor Woodward, commenting on this fact, states that:

"In a search for the cause of this considerable, widely distributed, and unexplained increase in the death-rate, the census sheets delivered to this department by the major and superintendent of police were carefully examined, in the belief that it might be found that the increase was apparent rather than real, and due merely to some error in the determination of the total population. Some foundation for this belief existed in the extremely small reported increase in the population, one half of 1 per cent., which hardly seemed consistent with the apparent growth of the District. These census sheets, in so far as the office work of them was concerned,were, however, found correct. The total population, the age, race, and sex distribution, and distribution by localities, were found to be consistent with previous censuses. Moreover, there was no increase in the birth-rate and still-birth-rate, such as might naturally be expected to appear had there been any considerable increase in the population, not shown by the census returns. Infant mortality, computed upon the basis of recorded births and not upon the basis of the enumerated population, showed an increase in keeping with the increase in the infant mortality rate if computed upon the enumerated population. The health department has been unable, therefore, to find any facts upon which to base an explanation of this increased mortality rate. But in view of its wide distribution throughout the entire range of causes of death and among both races and all age-periods, it seems probable that the increase was apparent rather than real, and that it is based upon some discrepancy between the methods of enumerating the population in 1913 and in 1915, possibly upon the fact that in the former year the enumeration was made about the 1st of May, while in the latter the enumeration was about the 1st of November."

In a review of the vital statistics, January to June, 1916, it is to be noted that the apparently high death-rate that prevailed during the calendar year 1915 has continued through the first half of 1916. In the former period there occurred 3,398 deaths as compared with 3,388 deaths of the latter period. During this period, too, there was a further increase in the death-rate of the white population, though a decided dimunition in the colored rate was recorded. Furthermore, as during 1915, the high general death-rate prevailing was due to a wide range of diseases and not to any few.

The Bureau of Food Inspection during the reported period has been most active, especially in the condemnation of perishable foodstuffs, maintaining sanitary conditions in such places where food is dispensed, and in the proper regulating of the use of common drinking, eating and toilet facilities. In the supervision of dairy farms and the dairy industry, inspection of the farms averaged from June 30, 1915, to June 30, 1916, 3.38 times, while individual cows were inspected on an average of 3.14 times during the year. In the latter connection, of the cattle tuberculin-tested, only 4.05 definitely reacted to the test in 1916, as against 9.18 per cent. in 1915. Excellent results have also been accomplished in all other branches of this service.

The report itself is profuse with tables, and fortunately such an extensive index is supplied that one may very readily find whatever particular data they require. It indeed must be disturbing to note a seeming increasing death-rate and at the same time to be unable to combat it from ignorance of the nature of the cause, and we extend to Doctor Woodward every wish of success in settling this unusual condition.

NOTES.

New York Health Department Urges Increased Use of Anti-Pneumococcus Serum.—The New York City Department of Health through its January 13 weekly *Bulletin* again calls to the attention of physicians of that city the availability of anti-pneumococcus serum. This is greatly prompted by the unusually good results obtained at the Hospital of the Rockefeller Institute in pneumonia due to pneumococcus Type I by the use of this serum.

Serum will not be given out, however, except for determined cases, since the serum is only active against pneumococcus Type I. The Department is willing, however, to determine the type of pneumococcus for the physician if sputum from cases of pneumonia is collected and sent in to it. The *Bulletin* describes the exact procedure for such collection and transmissal.

The types of pneumococci found in pneumonia have been determined by animal protection tests and these results are paralleled by agglutination results. To quote the *Bulletin*:

"The latter method, therefore, can be employed for routine determination. It has been found that three distinct types, I, II, and III, cause about 75 per cent. of all cases of pneumococcus lobar pneumonia. The remaining 25 per cent. are caused by members of a heterogeneous group, called for convenience Group IV, the members of which have no relationship one to the other in their serum reactions. Type III is the organism known as the pneumococcus mucosus. A serum against one type protects and, therefore, has therapeutic value only for infections caused by the same type. In the case of Group IV a group serum is evidently impossible. The therapeutic use of sera for Types II and III has not been sufficiently satisfactory to warrant their general application. The following table gives a general idea of the incidence of the different groups or types in pneumococcus lobar pneumonia. As is evident from the two sets of observations, the prevalence of the different types will vary from year to year.

	Types or Groups.			
	I.	II.	III.	IV.
	Per cent.			
Reported by Cole (1914), 72 cases	47	18	14	21
Dept. Laboratories (1914-15), 41 cases	24	42	10	24

"Administration of the serum is by the intravenous route. The average dose for an adult is 100 cc. This is allowed to flow into the vein by gravity and it may be diluted with sterile saline solution. The serum and saline should enter the vein at the body temperature, and after a few drops have entered the vein it is well to wait several minutes for any symptoms referable to the respiratory or circulatory system indicating hypersensitiveness. The remainder of the serum is then allowed to flow in very slowly. Cole advises the subcutaneous injection of about 0.5 cc. of serum when the sputum is collected to determine whether hypersensitiveness is present. A small vial of horse serum for this purpose can be obtained when the sputum is delivered to the laboratory. The dose is repeated depending on the response and the clinical condition of the patient. Two or more doses may be given at intervals of 12 to 24 hours. Some rise of temperature with subsequent fall follows practically each injection, although the lowering in temperature may be only temporary. If the serum is not sufficiently warm and is injected too rapidly, chills usually occur. Even when it is given properly, chills develop in about one third of the cases.

"Physicians receiving the serum for the treatment of any patient are expected to supply certain simple records of the history of the case and the subsequent course of the disease."

*

Provincial Supply of Antitoxin.—The Provincial Board of Health for Ontario will, at the end of the present month, complete a year's contract for the supply of diphtheria antitoxin, tetanus antitoxin, antimeningitis serum, smallpox vaccine and Pasteur preventive treatment for rabies. These, as well as mixed typhoid and paratyphoid vaccine, are supplied free to the public all over the province. Diphtheria antitoxin costs the Board 15 cents per 1,000 units, in vials, tetanus antitoxin, 30 cents per 1,000 units, in vials, anti-meningitis serum, $1.00 per 20 cc., smallpox vaccine, 4 cents per capillary tube and Pasteur treatment, $15.00 per person treated. Mixed typhoid and paratyphoid vaccine is prepared and supplied free by the Board's Laboratory, in Toronto. The aggre-

gate cost of supplying the province for the year is about $40,000, or about one quarter of the cost under commercial prices. All these products except typhoid vaccine are obtained from the University of Toronto and are prepared at the Connaught antitoxin laboratories about 12 miles outside of the city. Needless to say, the enterprise of the Board is the subject of many appreciative remarks by the public and the medical profession.

Since the war began the Board has supplied all the typhoid and paratyphoid vaccine used by the Canadian troops (some 400,000 doses) free of charge.

*

Mortality from Cancer and other Malignant Tumors.—The mortality from cancer and other malignant tumors in the death-registration area of the United States has been increasing almost continuously for the past fifteen years. It is greater in urban than in rural localities; among females than among males; among whites than among Negroes; and among persons in middle life and old age than among those in early life. Deaths due to cancer of the stomach and liver represent more than three eighths of the total.

These are among the significant facts brought out in a special report, "Mortality from Cancer and Other Malignant Tumors in the Registration Area of the Unites States, 1914," soon to be issued by Director Sam. L. Rogers of the Bureau of the Census, Department of Commerce.

The total deaths from cancer and other malignant tumors throughout the Registration Area (which contains approximately two thirds of the total population of the Unites States) in 1914 numbered 52,420, corresponding to a death-rate of 79.4 per 100,000 population. This figure represents an almost continuous increase—amounting to 26 per cent. for the entire period—since 1900, when the rate was 63. How much of this increase has been due to more accurate diagnoses and greater care on the part of physicians in making reports to registration officials, and is thus apparent rather than real, it is impossible to estimate. For registration cities having 10,000 inhabitants or more in 1910, the rate averaged 88 per 100,000, but for smaller places and rural localities in the registration states it averaged only 69.6.

Among the states, the lowest five rates—45.8, 46, 48.9, 51.5, and 57.8 per 100,000 population—are shown for Utah, Kentucky, Virginia, Montana, and North Carolina, respectively; and the highest five—109.9, 107.6, 101.2, 100.8, and 97.9—for Vermont, Maine, Massachusetts, New Hampshire, and California, respectively. (The rate for North Carolina relates only to places which had 1,000 or more inhabitants in 1910.)

At least a part of the difference between the high and low rates is accounted for, first, by the fact that in some states the average age of the population is considerably greater than in others, cancer being a malady much more likely to attack persons at advanced ages than those in the earlier periods of life, and, second, by the fact that in several of the states named there are considerable proportions of colored population, among whom the mortality from cancer is apparently lower than among whites.

The death-rate for whites throughout the registration states was 80 per 100,000 as against only 56.2 for the colored population.

The death-rate from cancer among women, 96.8 per 100,000, was more than 50 per cent. greater than the corresponding rate for men, 62.4.

For persons under 25 years of age the death-rate was only 2.8 per 100,000 corresponding population; but for the higher ages it is very much greater, increasing rapidly from each age group to the one next above. Thus, for persons 25 to 34 years of age, it was 13.9 in 1914 for those 35 to 39, 42; 40 to 44, 78.6; 45 to 49, 128.6; 50 to 54, 199.7; 55 to 59, 305.9; 60 to 64, 393.1; 65 to 69, 516; 70 to 74, 672.3; 75 to 79, 766.6; 80 to 84, 889.6; and 85 and over, 875.6.

Among both males and females, cancer of the stomach, liver, pharynx, and esophagus accounted for a greater proportion of the total deaths from cancer—approximately 47 per cent. among males and 32 per cent. among females—than is shown for any other group. The death-rates from this class of cancers were 29.6 per 100,000 for males and 30.7 for females.

*

Police, Fire, and Health.—Frequently one notices a comparative statement of the appropriations for the various departments of municipal administration, where oddly enough the health department always receives the smallest

amount. Usually, however, only the appropriations are mentioned, and we do not find a comparative statement which includes more than discrepancies in amounts appropriated. It is indeed ingenious and effective for a health officer to study a year's records to determine the property and human life lost and saved by the several departments. In the city of Cumberland, Md., as reported by the January *Bulletin*, the appropriation for the police, fire, and health departments were $22,000, $17,000, and $5,000, respectively. It is to be remembered that the work of the police and fire departments is entirely bent towards eliminating conditions after they have become a menace to the safety of the public. The work of the health department is almost entirely preventive. In this city, during 1915, the fire department attended 78 fires with a total property loss of under $38,000, with no persons injured or killed at any of these fires. During the same year the police department arrested 1,825 persons from whom the sum of $3,558 was exacted as fines. It has been difficult to compute the savings made by the health department in any one year, but it is known that had the death-rate of 1910 prevailed during every succeeding year to 1916 that over 500 more persons would have died, also laboratory examinations made at the municipal laboratory cost only $300, where if done at a commercial laboratory they would have cost $10,000. It is estimated that the activities of both the police and fire departments will prevail in about the same degree as in 1915. The point which the health department wishes to emphasize is the fact that for the amount of actual results obtained, the health department stands way above that of the police or fire department provided of course that the health department maintains its efficiency, yet not near as much money is appropriated for the latter as for the former. While this argument is undoubtedly fallacious in certain respects, the discrepancies in the several appropriations can hardly be disregarded.

*

Possible Extension of United States Registration Area.—At Nashville recently the Tennessee State Board of Health was investigated by representatives of the Division of Vital Statistics of the United States Census Bureau for the purpose of determining whether or not Tennessee is eligible for admission to the United States Registration Area.

*

Health Protection Accomplishments in Dallas, Texas.—It appears to the health department of Dallas that the most important accomplishment of organized health protection work is the development of a city-wide appreciation of the importance of such work, and of its economic and financial value to the community. With such an introduction there are enumerated in the January monthly bulletin of the department some of the specific health protection accomplishments to date, which are indeed commendable. The list is as follows:

First.—The health records of the city have been perfected to such an extent that they are now accepted by the federal government.

Second.—There has been a decided reduction in summer typhoid in Dallas. In August, September and October, 1916, only seventeen cases were reported, as compared with 113 cases during these three months in 1914.

Third.—The prevalence of children's diseases during the first three months after school opens has been materially reduced. In September, October and November, 1916, only 63 cases of diphtheria and scarlet fever were reported in the city, as compared with 160 cases of these diseases in the same three months of 1915. During the four weeks following the state fair in 1916, there were only 20 cases of diphtheria and scarlet fever, as compared with 70 cases in the same period in 1915. Only 26 cases of small-pox were reported in Dallas in 1916, as compared with 600 cases in 1914.

Fourth.—Over 500 dairies selling milk in Dallas are now operating under permits. These dairies furnish practically all the milk sold in the city. The sanitary scores of these dairies have shown a very decided improvement during the past year. Adulteration of milk has been largely stopped. Very little milk is now imported into the city from outside the county. Tuberculosis has been practically eliminated from among the dairy cows. The minimum sanitary score allowed for dairies has been raised from 60 to 70. The number of dairies scoring better than 80 has been increased very materially, and these dairies now supply

a large per cent. of all milk sold in the city. Milk buyers are learning to visit dairies and examine for themselves the sanitary conditions. The department has had more than 9,000 requests for information about dairies during the past twelve months. The custom of bottling milk on the streets or in stores has been stopped. Milk bottles may no longer be collected by dairymen from premises where there is contagious disease. The health department has received throughout the year active coöperation in all of this work from the Dallas County Dairymen's Association. Milk consumers should continue to secure from the department every few weeks information regarding the sanitary score of their milk producer and dealer, because in spite of the improvements already secured, and of the efforts to maintain these improvements, the sanitary conditions at individual dairies will sometimes fall below the desired standard.

Fifth.—Much less bad food is now being offered for sale in Dallas. In August, September and October, 1916, only 3,000 pounds were condemned and destroyed by the department, as compared with 75,000 pounds during the same three months in 1915.

Sixth.—During the past twelve months 900 unsanitary dry closets, each of which was a possible means of spreading contagious disease, have been entirely abolished. Two thousand two hundred other dry closets which cannot now be abolished, due to lack of sewers, have been made fly-tight during the same period.

Seventh.—As a result of systematic malaria investigations it has been determined definitely that there is a large amount of this disease in Dallas city, and the adjacent territory. In certain localities 25 to 30 per cent. of the people examined were found to be infected with the disease. Practically all the malaria mosquito-breeding places within the city limits have been abolished, or are now under treatment.

Eighth.—Three private sewers serving a comparatively large number of residences, and which formerly discharged into a stream above a certain park where children played in the water, have now been connected with the city sewer system, thus stopping the pollution of the stream.

A Solution of Small Town Health Problems.—An excellent argument for the grouping of small towns and surrounding territory into a unit for health work is made by the California State Board of Health in its January monthly *Bulletin*. Under the present laws of California every incorporated town, no matter how small, must maintain a board of health and a health officer. In too many instances this gives rise to a "foolish official farce." The result is that the pound man or the fire chief is made health officer and is immediately called "Doc" by admiring fellow townsmen. The small amount of money which the town could afford to pay for preservation of its health would not possibly tempt a physician or public health expert. As a consequence of this fact the California State Board of Health most earnestly recommends the grouping of towns and surrounding territories into a unit which shall secure the services of a full-time health expert, and in this manner such a district could obtain all the public health service that is now enjoyed only by the larger cities at a low cost. To accomplish this in this state it is necessary that an enabling act be written from the statutes by the Legislature. Indeed, as the *Bulletin* puts it, "Such a measure deserves the support of the people of every small town and surrounding territory who have an interest in their community health."

*

State Health Districts.—In order that all citizens in every part of California may secure equal advantages in the conservation of public health, the California State Board of Health proposes an enactment of a law for the formation of six health districts covering the entire state, the health affairs of each district to be in charge of a state health officer, who would be constantly in touch with local health officers and would assist and direct them in the enforcement of the state health laws and the regulations of the State Board of Health. Such is the plan as indicated by the January *Bulletin* of that State. It is suggested that at the time of epidemics he would take charge of control measures and decide whether the more highly specialized experts of the Board would be needed. Furthermore, he would inspect the sanitary conditions of cities and rural districts, order the correction of insanitary conditions, act as local field representa-

tive for various bureaus of the Board, and bring about more nearly complete disease and birth registration. He would consult with local communities relative to the need for enactment and enforcement of health ordinances. He would come quickly to the assistance of a health officer when a consultation is needed relative to diagnosis and control measures and outbreaks of communicable disease. The same bill also makes provision for the appointment of ten sanitary inspectors to carry on field work, inspect summer resorts, make sanitary surveys of towns, and improve rural hygiene. Their services would also be available for emergency work in the control of epidemics. The population of the proposed districts vary from about 210,000 to 350,000. This bill, if enacted, is indeed a most remarkable advance in public health administration and should go far in producing the desired coöperation and greater and more efficient health service.

⚜

The Problem of Ventilation.—The difficulties accompanying the maintenance of proper ventilation in public places, particularly on vehicles of transportation, are briefly though effectively set forth in the current weekly *Bulletin* of the Cincinnati Board of Health. This *Bulletin* first refers to its own particular problem, which is the ventilation of trailer cars of the Cincinnati Traction Company. The Department of Health has been informed by the Traction Company that three windows in the front and three in the rear of these cars are being so altered that fresh air can be admitted in abundance. The effectiveness of such changes as with all changes of this nature will now depend upon the Traction Company, its employees, and the public, all three of which seem to have equal responsibility in the matter.

It is pointed out that the Traction Company must consider larger coal bills and they naturally desire to keep this item of expense as low as possible. The employees are given orders concerning ventilation but do not always obey them. And the public has its own ideas about ventilation which frequently result in clashes between the passengers and the employees. It is possible for the passengers to report unimproved ventilation, but the public has so many ideas on this question, often radically opposite views from one another, that satisfaction is difficult to obtain. It is indeed true, as the *Bulletin* states, that the problem is one with many angles.

⚜

Health in New York City during 1916.—The Department of Health of New York City also publishes a brief résumé of its health during 1916 in the weekly *Bulletin* of January 6. Notwithstanding the epidemic of influenza and infectious colds and the epidemic of poliomyelitis which visited this city during 1916, the death-rate for the year is the lowest on record, to wit: 13.89. It is indeed remarkable to note the steady reduction in death-rate which this immense city has maintained since 1900 when the rate per 1,000 population was 20.57. The 1916 rate is based on an estimated population of 5,602,841 with a total toll of 77,801 deaths. It is stated that this gradual lowering of the death-rate has been accomplished through the reduction in mortality in the early years of life. In addition the incidents in the mortality of the acute infectious diseases has been lower. During 1916 the infant mortality rate per 1,000 reported births has been reduced to 93.1 as compared with the rate of 98.2 for 1915, and the rate of 125.6 for 1910. The death-rate from typhoid fever as reported for 1916 is .04 per 1,000 population as compared with the rate of .06 for 1915. Poliomyelitis caused 2,448 deaths in 1916 as compared with 13 for 1915. Reductions in death-rates were noted in the case of tuberculosis (pulmonary), measles, scarlet fever, diphtheria and croup, while the death-rate from the diseases of middle life, pneumonia, and whooping-cough remained about the same or increased slightly.

⚜

Wider Jurisdiction for City Health Officers.—According to the December *Ohio Public Health Journal* of the State Board of Health, Dr. T. C. Miller, Health Officer of Massillon, advocates giving city health officers jurisdiction over families whose children attend the city schools. At present the city health officer's authority ends at the city limits, although the city school district extends into an adjoining township. It is felt that frequently the health administration in such townships is lax. As a consequence of such lax regulations children from township

homes where there is disease may come to the city school and mingle with the other children, thus possibly causing an epidemic even in a carefully guarded city, annulling the efforts of a vigilant municipal health officer. According to the Ohio publication this suggestion is worthy of consideration. To give the city health officer jurisdiction it would be necessary to change the present law, but if a satisfactory measure could be drawn up such a change might be effected.

*

Sanitary Scoring in Cleveland.—The score card system as an index of sanitation is to be further developed this year by the Cleveland, Department of Health according to the January *Health Bulletin* of that city. This scoring will apply particularly in places where food is either sold or served. White cards are to be issued when the store or restaurant scores above 90 points. Blue cards are to be given when a scoring above 80 points is made. Red cards will be given when sanitary conditions fall before 80 points. As yet in Cleveland there is no legislation which requires a grocer or restaurateur to post these cards, but it is believed that the possessor of one of the new white cards will be anxious to display it and in places where the other cards are issued it is felt that the proprietors will attempt to attain a better score, since it is certainly to their business interest. The scoring is done by inspectors from the city bureau of laboratories. Under the scoring system the condition of salesrooms counts for 32 points; rear rooms, 36 points; toilet rooms, 20 points; cellar and basement, 8 points; and rear lot and out-buildings, 4 points.

During 1916 the 2,154 grocery stores inspected had an average of 88.7 points, and 575 restaurants averaged 88.5.

Health in Boston During 1916.—The December monthly *Bulletin* of the Boston Health Department contains a résumé of the activities of this department during the past year, and it is felt that the results accomplished in preventive medicine afford much hope and encouragement for even better results during the coming year. One of the most commendable results accomplished is from the campaign against typhoid fever, and in 1916 Boston showed the lowest number of deaths and the lowest death-rate from typhoid fever in its history. The 1916 death-rate from this disease deducting non-residents was 2.5 per 100,000. The death-rate for the year 1916 was 16.74 per 1,000 as against the rate of 16.06 for 1915. Increase in deaths are noted among the following diseases, measles, tuberculosis (all forms), poliomyelitis, pneumonia, influenza, and disease of middle age. In this connection it is interesting to note that the death-rate from poliomyelitis increased from .4 to 21.96 per 100,000 from 1915 to 1916. Decreases in deaths were noted in the case of diphtheria, scarlet fever, and whooping-cough. The total number of deaths shows an increase of 703 over the previous year. It is felt that this can be partially accounted for by the fact that each year more non-residents take advantage of the hospital facilities offered by Boston, and as these deaths must be figured in the death-rate it is obvious that they would increase the true rate. For example, 155 more non-residents died in Boston in 1916 than in 1915. The increase in rate is further accounted for by the severe outbreak of influenza and pneumonia in the early part of 1916 which was responsible for an increase of 200 deaths. To this increase may be added the 164 deaths from poliomyelitis and 48 more deaths due to an unfortunate electric car accident.

Public Health Notes.

In Rebuttal to Dr. Fishberg.—Last month there appeared in these columns a review of an article on "Traditional Fallacies about Tuberculosis," which was contributed to the *New York Medical Journal* by Dr. Maurice Fishberg. The author dealt very harshly with ten or so beliefs on the subject of tuberculosis, which are more or less commonly held as true. Several letters appearing in subsequent numbers of the journal in question indicate that Doctor Fishberg has stirred up a hornet's nest, as is evidenced by the following introduction to a reply contributed by Dr. A. Robin of the Hope Farm Sanitorium for Consumptives, Wilmington, Del.:

"Now and then some one who is outside the great movement against the white plague steps into the limelight and indulges in a few oratorical flings at the 'crusaders.' The flings do not hurt the crusaders, nor do they materially affect the world-wide crusade; but they furnish some sort of ammunition to the objectors, give courage to a lot of Rips who slumber while dreaming the dreams of the past, and, what is worse, disturb the mind of the layman whose judgment is easily distorted by conflicting opinions and whose natural inclination is to follow the leadership of those who are opposed to restrictive measures of any kind. For such people Doctor Fishberg's article will serve as a pillar of support.

"Doctor Fishberg dismisses many a live medical problem by the convenient term 'fallacy.' To the 'fallacies' that he discovered in relation to tuberculosis we will attempt to add one more, and that is the fallacy of his reasoning."

The greatest objection is directed toward that portion of Doctor Fishberg's paper which maintained that since the great majority of children showed by reaction to tuberculin that infection is contracted early in life, and since over 90 per cent. of autopsies showed healed tuberculous lesions in the lungs, it was evident that escape from the *disease* tuberculosis was due to active immunity produced by early infection, and further, that fatal cases were due to failure of the patient to overcome these early infections, rather than to new infection in adult life.

Not only correctness of the conclusions of Doctor Fishberg are disputed, but also the accuracy of the premises upon which they were based. It is denied that the lesions demonstrated by the autopsies were shown by careful histological studies to be really tuberculous, and that the mere presence of acid-fast bacilli in the lungs is not indicative of B. tuberculosis—least of all of *living* bacilli.

It is further denied that almost all children react to tuberculin, the experience of the writer being that only 60 per cent. to 75 per cent. react, the belief being that even of these many were due not to tuberculous infection, but to inherent or acquired sensitiveness to tuberculin.

In view of these things, the stand of Doctor Fishberg that adults are not subject to re-infection, and that efforts to prevent the same are time and money wasted, is held unproven.

*

A Mental Examination in Open Court.—June E. Downey, psychologist at the Wyoming State University, writes in the *Survey* for January 13, 1917, an account of what is believed to be the first psychological examination held in a court room according to the standardized methods of the laboratory.

A young man, James Howell, had been confined in the jail at Rawlins, Wyo., for a misdemeanor, and under suggestion of two fellow prisoners, had killed the jailer in an attempt to effect escape. Howell was indicted, and his attorney, finding that the prisoner was suffering from the *dementia precox* type of insanity, obtained permission from the court to have the Binet test performed before judge and jury, the result being that, instead of a criminal, Howell was shown to be brain-sick, his mental powers corresponding to those of a child six or seven years old.

The psychologist's account of the trial is very interesting:

"Imagine the attentiveness of jury and spectators as the questioning began with the tests for the three-year-old child. I realized that this beginning might make the whole affair seem absurd, since the normal adult, and even the child of eight or nine, finds these questions ludicrously simple; but Howell answered with the *naïveté* of a very small child. He pointed with perfect solemnity to his eyes, nose and mouth, and repeated after me, 'It rains, I am hungry.'

"One question asked the four-year-old is whether he is a little boy or girl. For Howell I varied the question a trifle, asking whether he was a man or a woman. To my surprise the answer came hesitatingly, 'I dunno; I ain't thought much about it,' at which a ripple of excitement passed over the court room. Later I put the question in the usual form and Howell answered, 'Boy.'

"The child of seven or eight years is able to repeat five digits, but Howell was unable to give more than three, the digit-span of the four-year-old child. Again and again he tried to retain four digits; he would name them on his fingers as a little child might have done, but always in

reproducing them he found that when he reached the fourth finger his bird had flown.

"One of the Binet tests exhibits the capacity of a child to comprehend what should be done in a given situation. Asked what he ought to do if he were going somewhere and had missed his train, Howell said, 'I'd run,' and he insisted that he could run any distance. He would also run if he had broken something that didn't belong to him, or if someone should ask him his opinion of a person whom he knew only a little. Another test involves seeing an absurdity in a statement. For example, you ask the eleven-year-old child to point out what's wrong in the statement: 'I have three brothers—Paul, Ernest and myself.' The average child retorts, 'He says he's his own brother!' In the cell examination Howell answered, 'He didn't say how many sisters he had'; in the court examination he answered, That's all right!'

"It was the same throughout the examination. Shown a picture of a man presumably in prison and looking wistfully out of the window, Howell manifested not a flicker of emotional interest. He merely enumerated a few objects that he saw and, because the foreground was light, spoke of 'Heaps snow,' with no consciousness of the fact that the scene was indoors."

The verdict of the jury was "insanity" on the first ballot. Aside from preventing the brutal hanging of an imbecile, the case is believed by Miss Downey to have been of distinct service in bringing before the court, not only the conclusions of the mental diagnostician, but also evidence and scientific methods upon which they are based. Secondly, it brings vividly before the public the need of more wide-spread mental examination of so-called criminals, and the early discovery of those who are likely to come into that class unless properly cared for.

✠

The Etiology of Poliomyelitis.—Horace Greeley of New York reports the isolation from specimens of brain and cord tissue taken from eight poliomyelitis victims, of a non-filtrable polymorphic bacterium.

Plants from the brain and cord gave a "streptococcus-like" organism, staining Gram-positively. Subsequent subcultures on blood-serum, washed with bouillon-limewater-lactose yielded a bi-polar bacillus, the poles of which were Gram-positive to a varying degree. A return from the bacillus to the "streptococcus-like" form could be accomplished by re-planting upon hydrocele-bouillon-limewater medium.

The organism seems to be identical with that isolated previously from similar tissues by Flexner and Noguchi, Rosenow, and others.

Injected into cats and rabbits, the organism produced a variety of symptoms. All of the cats showed sneezing, mucus discharge from the nose, and progressive weakness—symptoms similar to those described as cat distemper by veterinarians. Two showed pronounced paralytic symptoms, but the rest showed none beyond a passing weakness of different muscle groups. However, in a large proportion of the cases, the animals died and the organism could be recovered from the meninges.

Through an accident, a portion of the culture was squirted into the eye of the investigator, and, in spite of washing out with silver solution, was followed in about seventy-two hours by soreness of the throat and nose, digestive and nervous disturbances. Scrapings from the swollen post-pharyngeal mucous glands yielded the organism of the experiment.

A noteworthy discovery was that the organism could withstand the temperature of milk pasteurization and the author thinks that milk may be a factor in the transmission, although "for milk to be held responsible for many cases we might have to incriminate the cow as a potential 'carrier' of the germ."

"The remarkable way in which the spread of the malady is affected by the atmospheric temperature; the experiments detailed in reference to the growth of the organism at temperatures known to prevail when the disease is at its height, and its ready growth in milk and resistance to the pasteurization process, together with the case incidence among the children of milk drinking age, all strongly indicate that milk may be a very important factor in the spread of poliomyelitis."

Another hypothesis speculated upon is that there may be several organisms in the poliomyelitis group, some prevailing in diseases of the lower animals. Prior and co-incident epizoötics have been reported in connection with "polio" outbreaks, and it is believed that this hypothesis would help to explain the rural

sporadic cases, and the greater number of attacks among males in this country, especially among adults.

The article appears in the *Medical Record* for January 13, 1917.

✤

The Prevalence of Venereal Diseases in Canada.—A pamphlet under the above title, recently issued by the Commission on Conservation of Canada, presents certain salient facts and figures which prove conclusively that the time has come in the Dominion to establish drastic legislation to combat the venereal peril.

In the introduction by Professor Clarke of the University of Toronto it is stated that:

"When it is learned that more than 12 per cent. of the patients admitted to the public wards of the Toronto General Hospital, for various diseases, medical and surgical, have syphilis, it will be realized that we are dealing with an acute situation, as the facts which apply to that institution are merely an index of the prevalence of syphilis in the community.

"The menace to the health of the nation is perhaps greater than that of tuberculosis. If registration of the tuberculous is desirable, the same argument is doubly applicable in the regulation of syphilis."

Professor McKensie of the Department of Pathology of the same university discusses the pathological aspect of syphilis, and significantly states that "Although the immediate effects of venereal disease on the individual are serious enough, their great importance from the standpoint of race conservation lies in their delayed effect upon the individual and his or her offspring."

The Bordet-Wassermann reaction is well discussed by Prof. H. K. Ditweiler, who states that by means of this test 98 per cent. of all cases of syphilis can be detected. In applying this test to new patients of the Toronto General Hospital it was found that 12 to 14 per cent. of admissions were syphilitic. Sixty-six per cent. of these were not suspected of suffering from this disease for the reasons that (1) syphilis is a mimic and can simulate almost any known disease; (2) there is a so-called latent stage of syphilis, in which the patient shows no evidence of being infected—feels well, looks well, and on physical examination exhibits no lesions. Yet that patient is a menace to the community on account of his or her ability to infect others, or to bring syphilitic children into the world. Then again, such a patient is living on the crater of a volcano, for the dormant infection may light up at any time.

After discussing the astounding prevalence of this disease among the civil populations abroad and in this country and in the United States army, Dr. C. H. Hair, chief of the Toronto Special Treatment Clinic, gives statistics of the prevalence of the disease in the province of Ontario. It is found that according to the 1915 registrar general's report only forty-eight deaths are attributed to syphilis, and four to gonorrhea. However, since many other diseases result from syphilis, 1,367 additional deaths can be attributed to this cause.

To quote further:

"During the past thirteen months a syphilitic treatment clinic has been conducted in the Out-Patient Department of the Toronto General Hospital, the patients being referred from the other clinics and the results give a fairly accurate idea of the prevalence of the disease; 152 clinics have been held and 373 patients have been treated. Of these 28, or 8 per cent. only were treated in the primary stage of the disease; 70, or 18 per cent. in the secondary stage, and 206, or 55 per cent. in the later stages of the disease. The remaining 69 cases were, congenital 7, quiescent 24, not classified 38.

"Since October 6, 1916, routine Wassermann tests have been done in the wards of the Toronto General Hospital, and out of 971 tests 125 have shown positive syphilis, between 12 and 13 per cent."

In discussing gonorrhea, it is stated that of the 329 operations at the Toronto General Hospital in the past year over 12 per cent. were undertaken for the relief of conditions directly due to gonorrheal infection, 28 of such sufferers being married and 12 single. Taking into account major operations, 25 per cent. were performed for gonorrheal complications.

Prof. William Goldie of Toronto, in setting forth the conclusions and principles of contro of this problem, includes the following essentia features in such control:

1. Non-public registration;

2. Public registration and isolation of recalcitrants;

3. Free treatment for all who apply for it;
4. Free tests;
5. Supervision of mental deficients;
6. The administration of the plan by a Dominion body through the Provincial Board of Health.

*

Health Departments and Liquor.—"I venture to predict that no advance in the control of preventable disease of bacterial or infectious origin in the future could accomplish such reduction of the morbidity and mortality of the community, as would undoubtedly follow the elimination of alcohol as a beverage."

So says Haven Emerson, health commissioner of New York City, writing in the *Boston Medical and Surgical Journal* of January 18, 1917.

He states further that the records of his department show that no less than 2,000 deaths are admittedly due to the excessive use of alcohol, and that 8,000 cases of acute alcoholism are treated annually at Bellevue Hospital, New York.

He enumerates three classes of diseases from the sanitarian's point of view:

First, communicable diseases;

Second, diseases of occupation;

Third, disorders of development and function resulting from people's habits in their home or personal life, their habits of housing, eating, clothing, exercise, recreation.

Under the last heading comes alcohol, and Doctor Emerson holds that it is the duty of health departments "to teach, teach, teach, persuade, demonstrate, exhibit, exhort, prove that alcohol as a beverage, or in patent medicines is a menace to personal and community health, is a common source of sickness and death, is blocking the path of preventive medicine and is a danger to the physical and social development of the nation."

*

The Organism of Rocky Mountain Spotted Fever.—S. B. Wolbach, writing in the *New Orleans Medical and Surgical Journal* for January, states that a parasite has been found in proved infected ticks in large numbers, morphologically identical with the parasite found in the lesions of guinea pigs and monkeys infected with Rocky Mountain spotted fever.

There are two principal morphological forms, one a lanceolate diplococcoid organism, and a smaller rod-shaped form.

In testing for the infectivity of the ticks, each one was enclosed in a wire gauze capsule, fastened to the shaved abdomen of the pig with adhesive plaster. The parasite was found not to occur in ticks thus shown not to be infective, but only in those proved to be infective?

Transmission occurs by way of the salivary gland secretions. Transmission by fecal contamination of the wound does not seem possible, as the feces come in the form of small balls, which soon become hard and dry, and do not soil the skin of the guinea pig.

*

Health Publicity and "Punch".—W. F. Thompson is both canny and happy when he writes as follows:

"Only those problems which deal with the prevention of disease need be discussed in the newspaper column. Reference to diagnosis and treatment, except when used in a preventive sense, has no place in the lay print.

"Discussions on health topics, to be read and digested with the breakfast food, must be short. They must be so short that the modern, restless reader may glean the gist at a glance. Long winded, semi-scientific dissertations are invariably skipped for the more entertaining 'Mutt and Jeff,' or the sporting page. Every mail brings to every editor's desk long columns of public health stuff, in bulletin form, that could be easily expressed in short paragraphs. Needless to say that only terse articles, conveying clear messages in few words, are selected."

The article, "Publicity in Public Health Work," appears in the *Texas State Journal of Medicine* for January, 1917.

*

Health in Belgium.—A report on the health conditions in Belgium under the German occupation, the result of a special study made at the request of the Commission for Relief in Belgium, is given by W. P. Lucas, San Francisco (*Journal American Medical Association*, January 6, 1917). In this investigation he had the aid and counsel of Belgian physicians and surgeons, and a freedom of movement which under existing conditions is not possible to them. The objective of the inquiry was to determine the results of

the relief that has been given and what changes might be desirable and were possible under the circumstances. Dividing the population into the well-to-do or so-called upper classes, the agricultural classes, and the industrial and minor commercial classes, the first two of which comprise about 35 per cent. and the latter over 60 per cent., he finds that in the former, health conditions are fairly good and the enforced economy and temperance have probably had favorable results from the health point of view. Furthermore the almost universal response of the first class to the calls for need has helped in giving stimulation and occupation. The agricultural classes have not seriously suffered in health conditions, but in the third class, the industrial and minor commercial class, embracing about 5,000,000 people, the case is different. Their food supply is very close to the absolute necessities of nutrition. Lucas especially notices the tuberculosis situation which may be considered as directly connected with the unfavorable nutrition conditions. Undernutrition is having its results in the increase of tuberculosis, which is easily realized when one considers that the average daily consumption of fat lies somewhere between 20 and 30 gm. per individual, which is far too low. The growing lack in milk supply is another factor in the nutritional problem, and the diminution in the native supply of vegetables and fruit during the coming winter will undoubtedly unfavorably influence the tuberculosis situation. The increase in the tuberculosis clinics is marked. Every sanatorium is crowded; the waiting lists are larger, and the cases more acute than before the war. Statements from various hospital authorities are quoted supporting this statement, and the increase is progressing. The number of cases in the schools is especially marked in the large centers, and it is difficult under present conditions to carry out any antituberculosis campaign. Already all throughout Belgium the milk supply is deficient and of poor quality, and will be still further diminished during the coming winter. In the general adult population as well as in the school children, it is the opinion of those competent to know that the efficiency of the workingmen and laborers is markedly decreased. Another keen index of the abnormal condition in the lower classes is the diminution in maternal nursing, showing a general lowering of health and vitality of mothers. As in other warring countries, there is a great diminution in the birth rate. In children rickets has increased markedly, but infant mortality has fallen since the beginning of the war excepting in one or two large industrial centers. Institutions for directly feeding children have been greatly increased in number, and their efficiency is noted. On the whole he does not consider that the general health situation is a gloomy one under the circumstances. The well-to-do and agricultural classes are fully up to the normal, and while there is quite an amount of privation in the industrial and minor commercial classes, as a result of the relief organization the adult population is in a position to quickly recover its normal condition, and the special attention that has been given to care of children and adolescents has resulted in an actual improvement in infantile conditions in some respects. Excepting for the increase in tuberculosis and an epidemic of grip last winter and spring, the population has been singularly free from epidemics and contagious disorders. Lucas speaks highly of the skill and devotion of the medical profession in Belgium, and the magnificent work which has been performed by the women of Belgium in the care of the children. The maintenance of the relief organization is an absolute and daily necessity, and its cessation for a single month would bring a physical disaster to the industrial and lower commercial classes of the country.

*

The Payment of County Registrars.—*Public Health Reports* for January 5 outlines a decision of the Arkansas Supreme Court that local registrars are state officers, and that their compensations should not be paid by the counties.

"In 1913 the legislature of the state of Arkansas passed a law providing for the appointment of local registrars of births and deaths by the state registrar of vital statistics and for the payment of local registrars by the counties on certification by the state registrar that prompt reports had been made to him.

"The supreme court of Arkansas has decided that under the constitution of the state the counties cannot be required to pay the local registrars, as they are considered to be state

officers. This feature of the law has, therefore, been declared unconstitutional."

*

Implied Warranty in the Sale of Foodstuffs.—"An interesting decision of the Supreme Judicial Court of Massachusetts is published in the issue of the *Public Health Reports* of December 22, 1916. A Massachusetts man and his wife were made ill by eating pork, and they brought suit for damages against the dealer who sold the meat. The court states the facts as follows: 'His wife [the wife of the purchaser], acting as his agent, left to the defendant the selection of the meat, and paid for it at the current price for sound, wholesome pork chops. . . . The defendant Freshman undertook to make the selection so left to him. The meat was cooked, and was eaten by the plaintiff and his wife, and both were made sick.'

"The law of Massachusetts applicable to the case was stated in the opinion as follows: 'Where the buyer at a shop relies on the skill and judgment of the dealer in selecting food, and it is made known to the dealer that his knowledge and skill are relied on to supply wholesome food, he is liable if it is not fit to be eaten; while, in case the buyer himself selects provisions, the dealer's implied warranty does not go beyond the implied assertion that he believes the food to be sound.'"

"The court decided that the husband was entitled to damages, but the wife could not recover because 'the only sale was that made to her husband through her as his agent,' and 'there was no contractual relation, and hence no warranty,' between her and the defendant."

*

Health Hints of 1756.—Smollett was born in 1721. About 1756 he wrote a book, "Humphrey Clinker," which was very popular in its day and is still read. The work takes the form of a series of letters written his friends by an English traveler. Many of the letters are to Doctor Lewis.

His views on vacations can be inferred from the following: "I have ever found a change of company as necessary as a change of air to promote a vigorous circulation of the spirits, which is the very essence and criterion of good health."

That infection was recognized in that day is shown by the following: "We cannot even sleep without risk of infection. I say infection—this place is the rendezvous of the diseases—you won't deny that many diseases are infectious; even the consumption itself is highly infectious. When a person dies of it in Italy the bed and bedding are destroyed; the other furniture is exposed to the weather and the apartment is whitewashed before it is occupied by another living soul. You'll allow that nothing receives infection sooner or retains it longer than blankets, feather beds, and mattresses."

Smollett has many comments to make on bad ventilation and bad air generally. That there was need of a food department in his day is shown by a letter in which he contrasts the simple, wholesome food of his home in the country with the adulterated, sophisticated food of London.

"The good people are not ignorant of the adulteration, but they prefer it to wholesome bread because it is whiter than the meal of corn. The miller or baker is obliged to poison them and their families in order to live by his profession. Of the fish I need say nothing in this hot weather, but that it comes sixty, seventy, four score, and a hundred miles by land carriage. This is not the season for oysters, nevertheless it may not be amiss to mention that the right Colchesters are kept in slime pits occasionally overflowed by the sea, and that the green color so much admired by voluptuaries of this metropolis is occasioned by the vitriolic scum which arises on the surface of the stagnant and stinking water."

The policy of floating oysters was already in vogue, though whiteness rather than greenness is an indication that the oyster has been floated.

"But the milk itself must not pass unanalyzed, the produce of faded cabbage leaves and sour draff, lowered with hot water, frothed with bruised snails, carried through the streets in open pails, exposed to four rinsings, discharged from doors and windows . . . overflowing from mudcarts, spatterings from coach wheels, dirt from trash chucked into it by roguish boys for the joke's sake, the spewing of infants who have slobbered in the tin measure, which is thrown back in that condition among the milk for the benefit of the next customer."

After a recital which touches upon nearly every article of food, Smollett concludes:

"Now all these enormities might be remedied with a very little attention to the article of police, or civil regulation; but the wise patriots of London have taken it into their heads that all regulation is inconsistent with liberty and that every man ought to live in his own way, without restraint."—How to Keep Well, *Dr. W. A. Evans.*

✱

Birth and Death-Rates in 1915.—In the recently established birth registration area of the United States—comprising the six New England states, New York, Pennsylvania, Michigan, Minnesota, and the District of Columbia, with an estimated population of 31,150,000, representing 31 per cent. of the total for the United States—776,304 infants were born alive in 1915, representing a birth-rate of 24.9 per 1,000 of population. For every state in the registration area and for most of the cities there was a substantial excess of births over deaths, but this excess was most pronounced in those localities in which the proportion of foreign population is largest. The mortality rate of infants under 1 year of age averaged 100 per 1,000 births, ranging from 70 in Minnesota to 120 in Rhode Island, and, among places having 25,000 inhabitants or more, from 54 in Brookline and Malden, Mass., to 196 in Shenandoah, Pa. These are among the significant facts presented in a preliminary statement just made public by Director Sam. L. Rogers of the Bureau of the Census, Department of Commerce.

Industrial Hygiene and Sanitation.

Bad Teeth and their Effect on the Laboring Man's Efficiency.—It is a matter of common knowledge that impaired health means impaired efficiency. Very few studies have been carried on, however, which furnish information upon the part which oral prophylaxis bears in the connection. Dr. Carl E. Smith of Akron, Ohio, gives a very instructive account of such a study in the *Jour. Am. Med. Assoc.*, Jan. 13, 1917. Doctor Smith made in the past 16 months 30,000 mouth examinations of American and foreign laborers. He found 96 per cent. in need of dental service. In 30,000 mouths were found 60,000 cavities and 18,000 extractions were necessary. Toothache is a very prolific cause of impaired production. Piece workers often lose from thirty-five cents to one dollar and fifty cents daily from the cause. The remedy lies in the coöperation of the medical profession and in the establishment of industrial dental clinics.

✱

The December Issue of the "American Labor Legislation Review" deals in part with the health insurance problem. Favorable expressions are recorded by many men well known in the ranks of American industry, labor, and medicine. It also contains pertinent extracts dealing with the attitude of British and German trade unionists. The major portion of the *Review* deals with legislation for women in industry and was prepared in response to the continuous demand from all parts of the country for information on this vital topic. The number of females engaged in gainful occupations compared with the total female population 10 years of age and over in the United States is 23.4 per cent. Two charts in the *Review* give a rough graphic indication of the irregularity of employment in New York City. The charts indicate for the vast majority of trades covered a high degree of irregularity. Very helpful are tabulations pertaining to "Legal Limitation of Working Hours for Women in the United States" and "Man's Provisions of Minimum Wage Laws in the United States." These summaries are probably the most up-to-date and complete in existence. A chapter on "Childbirth Protection" deals with legislation necessitated by the ever-increasing number of married women in the industries. In the cotton textile industry (New England and Southern group) approximately 40 per cent. of all women aged 20 or over are married. Figures for 1900 showed that 15.5 per cent. of all women at work were married. Census data for 1910 have not yet been made available. Careful studies have demonstrated positively that married women are driven into commercial employment by economic necessity. A brief bibliography on "Women in Industry" com-

pletes the *Review*. The bibliography represents an effort to cite up-to-date and accessible works on various phases of the subject rather than to present an exhaustive list of references.

✠

Women in Munition Manufacture.—To find out what war orders mean to working girls in this country, representatives of the Russell Sage Foundation went to Bridgeport, Conn., last summer to conduct an investigation. The result of this investigation is described in *The Survey* of Jan. 6, 1917, by Prof. Amy Hewes. The number of women employed during the summer of 1916 was nearly 4,000. Only 100 of the women were living with their own families. Three serious issues have arisen in the case of the women munition workers in connection with the legal rate of wages: (1) Inducement to long hours of labor and night work; (2) Danger from explosion and industrial poisoning; (3) High cost of living and rise in rents. Night work is not popular with working women. A study of occupational diseases connected with the munitions industry is now in progress by the Federal Bureau of Labor Statistics. This does not, however, include wages and hours. It was supposed that Connecticut legislation prohibited night work for women. The labor laws, however, merely forbade work for women after 10 p. m., and fixed no hours in the morning before which they might not be employed. Consequently, women were kept idle from 10 p. m. until midnight, and then set to work again. A test of the law resulted in the decision that the law did not apply to manufacturing but only to mercantile establishments. Following this decision night shifts continued without the two hours' break. At present women work a total of 55 hours per week, the limit allowed by law. Little attention is being paid to the means of protecting workers from the dangers incident to the use of explosives and to the operation of the machinery in the factories. As many as 1,500 men and women are exposed to the danger from fulminate of mercury. Scrupulous personal cleanliness is the only preventive of this form of poisoning, yet according to the report, washing facilities are inadequate. Rents in Bridgeport have risen tremendously. To accommodate the increasing number of girls in the munition plant large buildings of the dormitory type were started. They are not yet ready for occupancy. The high cost of living upsets the high wages. The situation requires legislative remedial measures.

✠

The High Cost of Living.—The high cost of living presents at present a grave public health problem. Some figures given in the January number of the *Monthly Review of the U. S. Bureau of Labor Statistics* throw a glaring light upon the abnormal conditions prevailing in the United States. Considering prices on November 15 of each year from 1912 to 1916 all of the 27 of the most important articles of food tabulated were higher on November 15, 1916, than on November 15, 1912: Milk 9 per cent. higher, flour 72 per cent. and potatoes 121 per cent. higher. The prices quoted are retail prices. All articles combined were 27 per cent. higher. Another article in the *Review* deals with the increased cost of living in Great Britain. On September 1, 1916, the average prices of commodities of general consumption in Great Britain had increased approximately 65 per cent. over the prices prevailing in July, 1914, just before the outbreak of the war.

✠

Vocational Training.—The *Review* contains a series of articles on vocational training in the United States, Germany and Great Britain. Germany has no organized movement of vocational guidance. In the past the economic and social position of the children has for the most part settled the general class of employment which they were likely to enter. This attitude has resulted in an overcrowding of certain trades. The pupils are provided with handbooks furnishing information about various occupations. Parents and guardians obtain valuable information from those handbooks. Such books are also prepared on behalf of the board of trades for various cities in England. Individual pamphlets deal with various occupations.

✠

Tuberculosis in the Transvaal.—An article in the *Review* deals with the miner's phthisis on the Witwatersrand in Transvaal. The article represents a short abstract of the report rendered by a committee appointed by the minister of mines of the union of South Africa on February 26, 1912. The primary cause of the disease is

silicosis. In the later stages tuberculosis sets in. The disease was found to fall most heavily upon machine-drill miners, 48 per cent. of this group being affected. The committee states that any broad policy aimed at the prevention of miner's phthisis must include measures to prevent the formation and dissemination of dust as well as the protection of the workmen. The risk of conveyance of tuberculosis from infected persons to healthy persons underground is by no means negligible. The report contains detailed recommendations.

*

Industrial Medicine and Surgery.—H. E. Mock, Chicago (*Journal A. M. A.*, Jan. 6, 1917), says the conservation of life by the prevention of disease and accidents among employees, the basic principle underlying all forms of industrial medicine, is the greatest influence for socialization in our country at present, and the company surgeon of today and the future has the opportunity of extending medical science into this vast field of endeavor. Heretofore, owing to ignorance and lack of interest and provision, this field of medicine has been considered narrow. But when a company surgeon realizes that for greater efficiency an employer has the right to demand a healthful, physically and mentally normal working force and the employee is justified in demanding healthful, sanitary working conditions, and that business principles justify both these demands, and when he possesses a sufficient enthusiasm and knowledge to master the details, his value is unlimited. The industry with which the writer is connected has gradually extended its medical staff and equipment from a four-room office with one doctor and two nurses in 1909 to an eighteen-room office with seven doctors, twelve nurses and two dentists in 1916. The doctors spend part of the time every day in the work so that there is always someone in charge of the company office, while many of the very best of the company surgeons devote their whole time to the industries employing them. As a rule, the greatest corporations find they can get better trained surgeons and physicians if they require them to give only a part of their time to the work. The work of the medical staff and the preventive surgery methods are outlined by Mock, who describes the first aid equipment, and mentions especially the universal use of the tincture of iodin introduced by him as the best antiseptic for first aid in injuries. The examination of employees as a preventive measure is also noticed at some length, and the scope of the work described. The industrial visiting nurse has much to do with the investigation of this latter problem, and no plan of medical supervision is complete without her assistance. The industrial dentist is also doing more and more in the promotion of health efficiency, and the company surgeon who takes advantage of his opportunities is destined to better his abilities in medicine and become also a sociologist and economist whose influence extends through the whole community.

*

The Goggle Problem in the Chemical Industry.—I. R. de la Terre Bueno of the General Chemical Company discussed this subject at the last meeting of the National Safety Council in Detroit. He points to the difficulty of compelling workmen to wear unbecoming goggles in chemical plants. Men *will* take a chance and don't seem to appreciate the danger to which they are exposed by such neglect. The ideal goggle should afford perfect protection to the eye, should have a large field of vision, should be comfortable, and in addition must not be unsightly.

*

Rarity of Tuberculosis in Workers on Lime.—G. Fisac has called attention repeatedly at various national and international congresses to the fact that persons, whose occupation brings them into close contact with lime and plaster, display immunity against tuberculosis. He quotes data which seem to indicate that lungs and bones affected with tuberculosis have an abnormally low lime content. No one has acted as yet on the logical therapeutic conclusions to be drawn from this important observation. The author does not supplement the statements, which he makes in *Siglo Medico* of November 4, 1916, by technical or clinical details.

*

New Division of Occupational Diseases.—The Medical Board of the Union Hospital, Borough of the Bronx, New York City, at a recent meeting voted to establish a division of occupational diseases with Dr. Frederic W. Loughran as at-

tending physician in charge. The patients, before their discharge, will be instructed in prophylactic measures such as pertain to their professions. It is the intention to reach the employer whenever possible in order to stimulate an interest in industrial hygiene.

✱

Further Responsibilities of the Employer.—A rather interesting decision was recently rendered by Deputy Compensation Commissioner W. C. Richards of New York state. The decision was to the effect that employers whose employees are forced to traverse a dangerous area to or from the noon meal are responsible for their safety and are liable to pay compensation in case of injury under the laws.

✱

Educational Standards in New York.—Under the new law in New York state which went into effect February 1, 1917, all children between the ages of 14 and 15 years must show, in addition to the 130 days of school attendance, that they have completed the eighth grade instead of the sixth grade as heretofore. For children between the ages of 15 and 16 years the sixth-grade limit remains the same as previously.

✱

New York State Safety Congress.—The December *Bulletin* of the New York State Industrial Commission gives a brief account of the first meeting of the New York State Safety Congress, which took place Dec. 11 to 14 in Syracuse, N. Y. A number of splendid addresses were heard on problems pertaining to industrial safety and the discussion, which followed, was very animated. The delegates in attendance represented the great manufacturing corporations, the trade unions, the civic organizations and the general public of both sexes. In the course of his address Commissioner Lynch gave plenty of thought to the audience by pointing to the following New York state figures for 1916: Number of industrial accidents, 1,500; persons permanently and totally disabled, 120; persons partly and permanently disabled, 6,180; cost of compensation, $11,500,000; daily cost of industrial accidents, $40,000; wage loss compensation, medical cost, administration expenses, $100,000 per day. Eight organizations observing most modern safety ideas reduced accidents from 30 to 62 per cent. One firm reduced hazards and accidents 75 per cent.

✱

Fire Prevention in Public Schools.—The Fire Commissioner of New York City, Robert Adamson, discusses in a very instructive manner "Safety for Public Schools," in the December issue of *Safety Engineering*. The city appropriated $500,000 for fire prevention changes in the public schools in accordance with recommendations of the fire department. The appropriation was made after a very comprehensive investigation. Definite standards for fire protection and fire prevention in the schools were established. The Commissioner recommends that the Board of Education employ a supervising fire prevention janitor, whose duty it shall be to make constant inspections of the schools.

✱

Accident Prevention in the West.—What efficient accident prevention did for the Chicago and North Western Railroad in dollars and cents was brought out strikingly by R. C. Richards at the last meeting of the National Safety Council. In the Middle West, the average cost of railroad accidents is about $115 per case. In the six years and three months that the Safety Organization has been in existence on this railway, up to September 1, 1916, with an increase of nearly 450 additional miles of railroad, there were over 547 fewer fatalities and 16,591 fewer injuries. Anyone can figure out the tremendous saving to the railroad brought about by its efficient "Safety First" organization. Some other interesting figures pertaining to "Railroad Accident Prevention" were presented at the same meeting by Marcus A. Dow of the New York Central Lines. During 1915 only one passenger lost his life in a train accident in the railroads of this country, out of 11,000,000 passengers transported. Only one employee was killed in a train accident for each hundred loaded freight cars transported a distance equal to seventeen and one-half times around the world.

✱

The Pennsylvania Railroad has issued a "Safety Calender" especially designed for young people to teach them the dangers of taking "short cuts" across railroads, playing on the tracks, or using railroad rights of way, bridges and trestles as highways. The calendar is full of snappy, timely instruction.

Plumbism and Bullet Wounds.—We are accustomed to look upon lead poisoning as one of the unfortunate consequences of work in certain hazardous industries. It is rather surprising to know that lead poisoning may follow injury with bullets which become lodged deeply in the tissues. This is of particular significance when one considers the large number of cases in which bullets are not extracted. Such occurrences have been observed in Germany by Lewin, Keister, Denning and Neu. Plumbism may not appear until many years after the injury. Disselhorst as well as Schneider in the *Muenchener medizinische Wochenschrift* of September 26, 1916, express their opinion that deep-seated bullets should not be removed for anatomical reasons. An operation should be seriously considered if lead appears in the urine.

Accidents on the Decrease.—The summary of mortality statistics for 1915 issued by the U. S. Bureau of Census bears out strikingly the success of the "Safety First" agitation of the past few years. Here are just a few figures which will illustrate this:

	1913.	*1914.*	*1915.*
Deaths due to accident	54,011	51,770	51,406
Rate per 100,000 population	85.3	78.5	76.3
Deaths due to railway accidents	——	——	6,652
Deaths due to street car accidents	——	——	1,555
Deaths due to automobile accidents	——	——	3,978
Deaths due to mine accidents	——	——	2,009
Deaths due to machinery accidents per 100,000	2.4	2.0	1.9

All of these figures represent improvements over previous years with the exception of deaths from automobile accidents. The increase of these deaths has not been so rapid however as that in the number of machines in use. The statistics pertain to the United States Registration Area exclusively.

Incidental to Employment.—Judge Ward has succeeded in obtaining from the state compensation board at Albany an award of $2,600 for Harry L. Markell of Dolgeville, who lost his eye a few weeks ago as the result of an accident at factory No. 2 of the Daniel Green Felt Shoe Company, of which he is superintendent. Mr. Markell's eye accidentally came in contact with the sharp point of a pencil in the hands of a salesman, with whom he was talking on some matters of business, and an injury was inflicted which later made it necessary to remove the eye. —*Hamilton Republican.*

"Dyeing and Cleaning," an abstract of an inquiry made by the Bureau of Inspection of the New York State Industrial Commission, appeared in the November issue of the *Bulletin*. The article discusses the processes as such, which are principally of a chemical nature, and the attending health-hazards. Certain recommendations are made for the prevention of fires and explosions. Business is largely employed in such establishment. No known fires or explosions have occurred with this trade during the past year. The inquiry was made by John H. Vogt, Chemical Engineer, in charge of the Division of Industrial Hygiene.

Factory Supervision.—The experience of the health department at the Norton Company and the Norton Grinding Company, Worcester, Mass., in regard to the medical supervision of its employees is reported by W. Irving Clark, Jr. (*Journal A. M. A.*, Jan. 6, 1917). The best time to examine any employee, he says, is before he is hired, thus eliminating any man totally unfit for the work. Rejections, however, should be made only when necessary, and the examination cannot be too complete. They arbitrarily reject all applicants over 45 years of age, all men with one eye or serious eye defects, all cases of contagious disease including, of course, tuberculosis, any with more than second degree hernia, cases of uncompensated heart disease, varicose ulcer, fourth and fifth degree flatfoot giving trouble, and marked hypertension. The list of defects not barring from employment includes but few employees carrying them. The average workman, though with numerous slight defects, is perfectly capable. There are, of course, some departments where restrictions must be higher than others, and for these they try to get men as absolutely fit as possible. The candidate is told of his defect and wherever possible is instructed how to get rid of it. Several of their employees have followed these instructions.

They find that the average workman does not object to physical examination, and most of them are pleased to have it made on account of the information it gives them and acquaintance with the doctor, to whom they are going to apply afterward in case of sickness or accident, and the most complete examination does not take more than ten minutes, provided no laboratory tests are required. Periodic examinations tend to keep the man in good condition; and as it is impossible to find men absolutely without defects, it is possible to place men in departments where they run the least risk and are most efficient. An examination each time a man is transferred prevents the possibility of unfit assignments. All men having any sickness or accident apply to the hospital, and are there examined. The number of rejections altogether is very small. All employees who are injured receive treatment at once in case the accident is reported, and the loss of time from injuries has been reduced to the minimum. They had no case of sepsis, though they cannot absolutely say they have excluded all infection. The routine treatment of accidents is to first wash the wound with commercial gasoline, using it like water, and scrubbing with sterile gauze. Following this at once, tincture of iodin, U. S. P., is poured into the wound and over the skin, allowed to dry and a sterile gauze dressing applied. Iodin to be 100 per cent. efficient as an antiseptic must be used within thirty minutes after receipt of the injury. The full power of the hospital for good in these cases has never been completely brought out. During the month of April they treated 474 accidents, but one of which was severe enough to draw compensation. Its effect is to cure so rapidly that its full facilities for after-treatment have not been called on. A very little inducement brings every case, no matter how light, to the shop hospital. The treatment for sickness is prophylactic, not curative. The aim is to diagnose and see that the man gets immediate attention from his family physician or a specialist as indicated. If a man has a temperature of 100.4 he is not allowed to continue or return to work, and a follow-up system is in use for various obvious reasons.

Personal Notes.

At the recent annual meeting of the Society of American Bacteriologists, held at New Haven, Conn., the following officers were elected: President, L. F. Rettger; Vice-President, R. E. Buchanan; Secretary-Treasurer, A. Parker Hitchens; members of the Council, Jean Broadhurst, L. A. Rogers, E. A. Ingham; delegate to A. A. A. S., Philip B. Hadley.

⁂

It is, indeed, most gratifying to note the recent reappointment of Dr. Oscar M. Dowling as president of the Louisiana State Board of Health. It is not often that the appointment to such a state office arouses such wide-spread publicity as the question of Doctor Dowling's reappointment has, but in this case it was a struggle between the wish of the people for the continuance of efficient health administration and the will of political power. One of the many commendatory editorials appearing in the local papers states, in part, as follows: "With no weapons to combat his powerful political enemies but his splendid record of service and assertive public confidence, Doctor Dowling has won a notable victory. . . . Dr. Dowling's victory is the people's victory, the victory of non-political control of the public health affairs of the state. . . . In every section of Louisiana there is tangible evidence of his efficient stewardship. He has done more than any living man to put Louisiana on the health map of the United States and to bear to its people the profitable knowledge that hygiene and sanitation are conducive to healthfulness. It is gratifying to know that the standards he has set are to remain and that they are not to be fettered by political favoritism."

⁂

A significant advance in public health administration is demonstrated in the proposed creation of a new city government office for New York City, that of consultant on health and hospitals to the Board of Estimate. If this proposed plan goes through, it will bring Dr. S. S. Goldwater, former commissioner of health of New York City, again into municipal service,

for Doctor Goldwater has agreed to occupy this new post without pay for the remainder of the year 1917. New York is, indeed, most fortunate to have a man of such qualifications to be the first occupant of this important post.

⚜

Dr. Frankwood E. Williams has resigned his position as chairman of the Massachusetts Advisory Prison Board and executive secretary of the Massachusetts Society for Mental Hygiene, to become associate medical director of the National Committee for Mental Hygiene.

⚜

It is announced that Prof. W. Kolle, chief of the Institute for Bacteriology and Hygiene of the University of Berne, has been appointed to succeed Professor Ehrlich in the Institute for Experimental Therapy at Frankfort. Prof. Hans Sachs, formerly assistant to Professor Ehrlich at Frankfort, has been appointed director of the Institute, under Professor Kolle.—*Exchange.*

⚜

Dr. Howard A. Streeter of Marblehead, Mass., has been appointed state district health officer of the Berkshire District of Massachusetts. Dr. Stanley H. Osborn, the former encumbent, has resigned to become epidemiologist of the Massachusetts State Department of Health.

⚜

We regret to announce the death of Mr. R. B. Dole, chemist in the United States Geological Survey, Washington, D. C., which occurred on January 21, 1917, after a brief illness.

⚜

Dr. Charles E. Terry has resigned his position as health officer of the city of Jacksonville, Fla. to devote his time to writing. He is to take charge of the new section the *Delineator* (New York) has recently inaugurated on health. The city of Jacksonville sincerely regrets the loss of Doctor Terry's services, for during the seven years of splendid service as city health officer he gained a nation-wide reputation, championing the many needed reforms, both in public health administration and methods.

⚜

The National Association for the Study and Prevention of Tuberculosis announces that its plans are complete for the publication of a monthly journal for physicians and research workers in tuberculosis, to be known as the *American Review of Tuberculosis.* The *Transactions* of the annual meeting of the association will be discontinued and the papers presented at these meetings will be published in the *Review.*

The first issue of the new journal will appear in March, and will contain approximately sixty-four pages of reading matter. It will be of standard magazine size. Dr. Allen K. Krause of Baltimore has been appointed managing editor of the *Review,* and its editorial policy will be determined by an editorial staff of seven members to be appointed by the board of directors of the association.—*Exchange.*

⚜

Dr. John S. Billings, after twenty years' service in the New York City Health Department, has resigned his position as deputy commissioner of health and director of the Bureau of Preventable Diseases, to take effect May 1, 1917.

⚜

It is announced that Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, has been elected foreign associate member of the Paris Academy of Medicine.

⚜

Dr. Linsly R. Williams, deputy state health commissioner of New York, will act as commissioner of health during the absence of Dr. Hermann M. Biggs in France.

⚜

Dr. R. M. Pearce, John Herr Musser Professor of Research Medicine at the University of Pennsylvania, has been appointed to take charge of the survey of the conditions of life among the people of Argentina and Uruguay, recently undertaken by the International Health Board.

⚜

Dr. Frederick M. Harris of La Crosse has been appointed director of the second state coöperative laboratory of Wisconsin. The laboratory has been established at Fond du Lac, and the expenses are shared mutually by the State Board of Health and the locality in which it is established.

⚜

Dr. Alfred E. Shipley of Brooklyn, N. Y., has been appointed secretary of the New York City Department of Health to succeed E. W.

Sheffer who was retired January 1, after twenty years of service.

✻

Dr. Hasbrouck Delamater of Kansas City has been appointed health officer of the city of St. Joseph, Mo.

✻

Dr. Philip E. Blackerby has been appointed registrar of vital statistics of the Kentucky State Board of Health to succeed Dr. W. L. Heizer who recently resigned to become secretary of the State Tuberculosis Commission.

✻

At the recent annual meeting of the Oregon State Board of Health, Dr. A. C. Selby was elected chairman of the board, and Dr. David N. Roberg was reëlected secretary and state health officer.

✻

Dr. Francis E. Harrington of the United State Public Health Service has been granted leave of absence by Surgeon General Blue to take charge of the health work of Jefferson County, Alabama, of which he has been elected full-time health officer. Dr. C. D. Gaston, city health officer of Birmingham, however, will still continue at his post. The unified health system recommended by Surgeon Carroll Fox, of the Service, calls for the expenditure of about $30,000 by the county for its maintenance. One of the most important features of the scheme is the withdrawal of the health supervision of the Birmingham schools from the hands of the Board of Education, and placing it under the control of the county health officer.

✻

At a recent meeting of the Arkansas State Board of Health, Dr. J. T. Clegg of Siloam Springs was elected chairman, and Dr. B. A. Fletcher of Augusta was elected vice-president of the board for 1917.

✻

Arthur H. Young, who for some years has been supervisor of labor and safety of the Illinois Steel Company, Chicago, took up his new duties as director of the American Museum of Safety, New York City, on January 1, 1917.

✻

The American Association of Industrial Physicians and Surgeons offers a prize of $100 for the best thesis on any subject related to industrial medicine and surgery by any undergraduate medical student of the United States. The thesis must not contain more than 5,000 words. All theses must be in the hands of the secretary of the association by May 1, 1917. H. E. Mock, M. D., Secretary, 122 South Michigan Ave., Chicago, Ill.

✻

The Association of Military Surgeons of the United States announces the results in the Henry S. Wellcome Prize Competition. Captain Mahlon Ashford, M. C., U. S. A. who wrote on the subject, "The most practicable plan for the organization, training and utilization of the medical officers of the Medical Reserve Corps of the United States Army and Navy, and of the medical officers of the Officers' Reserve Corps of the United States Army, in peace and war," was awarded a gold medal and $300. First Lieut. Henry C. Coe, M. R. C., of New York City, who received the honorable mention for this prize was awarded a life membership in the association. A silver medal and $200 was awarded to Assistant Surgeon-General W. C. Rucker, U. S. P. H. S., whose essay was entitled "The influence of the European War on the transmission of the infections of disease, with special reference to its effect upon disease conditions of the United States." Passed Assistant-Surgeon J. R. Hurley, U. S. P. H. S., received honorable mention for this prize and a life membership in the association. These prizes, which were given by Mr. Henry S. Wellcome, an American living in London, are annually competed for by officers of the Army, Navy, Public Health Service, the National Guard and the Officers' Reserve Corps of both the Army and and the Navy. The essays of the successful contestants will be published at an early date in the *Military Surgeon*.

✻

The following persons were elected to membership in the American Public Health Association, January, 1917:

Dorothy Reed Mendenhall, Madison, Wis., Physician and Lecturer on Health, University of Wisconsin.

Laura Leonard Gilman, M. D., Madison, Wis., Assistant Bacteriologist, Wisconsin State Laboratory of Hygiene.

Walter Junkins, Westfield, Mass., Agent, Board of Health.

Paul Nichols, B. S., Malden, Mass.

Edwin F. Voigt, Urbana, Ill., Assistant Bacteriologist.

Ashley B. Morrill, M. D., Chicago, Ill., State Health Officer.

M. J. Mackler, Boston, Mass., Student School for Health Officers.

E. H. Gage, Boston, Mass., Sanitary Engineer.

A. W. Akerley, M. D., Boston, Mass.

John J. McCormick, M. D., Woburn, Mass.

Edward B. Oliver, M. D., Fort William, Ont.

John Collinson, M. D., Havre De Grace, Md., Deputy State Health Officer.

H. B. Neagle, M. D., Dorchester, Mass.

B. S. Beach, M. D., Chicago, Ill., Sanitary Inspector.

Mr. William C. Groeniger, Columbus, Ohio, Director, Division of Plumbing, Ohio State Board of Health.

Elizabeth Ingram Adamson, M. D., Niagara Falls, N. Y.

Martin M. Kloser, B. S., City Board of Health, Shreveport, La., Chemist.

W. H. Coon, M. D., Haverhill, Mass., Harvard Infantile Paralysis Commission.

Mr. C. A. Abele, Mass. Institute of Technology, Cambridge, Mass.

Mr. Norbert M. Buderick, Buffalo, N. Y., Chemist.

Mr. S. T. Powell, Baltimore, Md., Chemist and Bacteriologist, Baltimore County Water & Electric Co.

Ralph M. Eppstein, Ph. C., M. D., Chicago, Ill., School Physician, Tuberculosis.

G. A. Lurie, M. D., Mt. Vernon, Ill., District Health Officer, State Board of Health.

A. George Gigger, M. D., Providence, R. I., Assistant Pathologist, State of Rhode Island.

Emanuel B. Fink, Chicago, Ill., Student of Medicine and Public Health.

Warren E. Forsythe, M. D., State College, Pa., Director of Health Service.

Charles C. Kimball, M. D., Ph. D., Watertown, N. Y., Commissioner of Health.

George R. Taylor, Scranton, Pa., Chemist, Scranton Gas & Water Co.

P. H. Norcross, Atlanta, Ga., Consulting Engineer.

Norman C. MacLeod, M. D., Newport, R. I.

Harry N. Jenks, Burma, India, Sanitary Engineer, Burma Mines, Ltd.

Current Public Health Literature.

AMERICAN.

American Labor Legislation Review, New York.

VI. December.

Attitude of British and German Trade Unionists toward Health Insurance.
Recent American Opinion in Favor of Health Insurance.
Irregularity of Employment in New York City.
Legislation for Women in Industry. 1. Women in American Industry; 2. Hours; 3. Minimum Wages; 4. Health, Comfort, and Safety; 5. Child Protection; 6. Bureaus of Labor, Minimum Wage Commission, etc., Dealing with Labor Legislation Affecting Women; 7. Short Bibliography on Women in Industry.

American Medicine, Burlington, Vt.

XI. December.

Etiology of Rickets. A. M. Gossage.
Principles Involved in Notification of Tuberculosis. P. H. Bryce.
The Poliomyelitis Epidemic—A Review of the Field Work Performed by the Health Department. J. R. Graham.
The Professional Secret and Venereal Diseases. A. O'Malley.
Are Venereal Diseases Contagious? H. Crutcher.

American City, New York.

XVI. January.

Making Pension Systems an Asset. Lawson Purdy.
Letters on the Problem of Smoke Abatement.
A Unique Industrial Center. H. F. Chapin.
The Nature of Color in Water. Thorndike Saville.
The Problem of Additional Sources of City Revenue. F. W. Powell.
Public Schools as Municipal Neighborhood Recreation Centers. H. O. Berg.
Civic Organizations and Child Labor. Helen C. Dwight.
Keeping of Records at Sewage Disposal Plants. C. G. Wigley.

American Journal of Clinical Medicine, Chicago.

24. January.

Relation of Sore Throat to Intestinal Infection. D. H. Stewart.
A Symposium on Long Life. J. M. French.
A New Theory of the Etiology of Epilepsy. L. V. Dawson.
Therapeutic Indications Suggested by Sputum Findings. G. R. Williams.

Boston Medical and Surgical Journal.

CLXXVI. January 4.

The Beneficial Results of Prenatal Work. M. M. Davis.
Results Obtained by the Class Method of Treatment of Tuberculosis during a Period of Ten Years. J. H. Pratt.
Report of a Dietary Study of St. Paul's School, Concord, N. H. F. C. Gephart.
Remarks on Health Insurance. C. E. Mongan.

January 11.

The Public Health Aspects of Leprosy. G. W. McCoy.
The Harvard Infantile Paralysis Commission and its Work in Massachusetts. R. W. Lovett.

January 18.

The Duty of the Health Department in the Alcohol Question. Haven Emerson.

Dodge Idea, Mishawaka, Ind.

33. January.

Sojourn of the Women in Industry. Marie L. Obenhauer.
Using the "Should Be" in Making the Factory Safe. J. M. Wilson.
Earning and Saving Through Employee's Benefit Associations. W. L. Chandler.

Factory, New York.

XVIII. January.

Getting More Out of the Factory Laboratory. L. C. Wilson.

Journal of the American Medical Association, Chicago.

LXVIII. January 6.

Industrial Medicine and Surgery: The New Specialty. H. E. Mock.
Medical Supervision of Factory Employees: Result of Five Years' Experience. W. I. Clark, Jr.
The Production of Antipoliomyelitic Serum. J. W. Nuzum.
General Health Conditions in Belgium after Two Years' Relief Work by Commission for Relief in Belgium. W. P. Lucas.
Aural Typhoid Carriers. A. B. Bennett.

January 13.

Summary of Pennsylvania State Work in Poliomyelitis. S. G. Dixon.
Further Observations on the Connellan-King Diplococcus Throat Infections. J. J. King.
Medical Supervision of Street Railway Employees. C. H. Lemon.
Bad Teeth and Their Effect of the Laboring Man's Efficiency. C. E. Smith.
The Sanitation of Public Markets. D. B. Armstrong.
Filariasis: Report of Two Cases in the District of Columbia, and an Analysis of the Cases Reported for Eastern North America. M. W. Lyon.

January 20.

Vaccin Therapy: Its Possibilities and Limitations. D. J. Davis.

Journal of Bacteriology, Baltimore.

II. January.

The Colorimetric Determination of Hydrogen Ion Concentration and Its Applications in Bacteriology. I. W. M. Clark and H. A. Lubs
Soil Flora Studies. I. H. J. Conn.
The Influence of Milk and Carbohydrate Feeding on the Character of the Intestinal Flora. IV. Diet Versus Bacterial Implantation. T. G. Hull and L. F. Rettger.
Coccidia in Subepitheial Infections of the Intestines of Birds. P. B. Bradley.
A Bacterial Disease of the Wragg Cherry. Preliminary Note. W. G. Sackett.

Journal of Infectious Diseases, Chicago.

XIX. December.

The Necessity of a Standard Blood-agar Plate for the Determination of Hemolysis by Streptococci. W. C. Becker.
Acid-production and Other Characters of Bacillus-coli-like Bacteria from Feces and Sewage. Max Levine.
The Etiology of Typhus Exanthematious in Mexico. Olitsky, Denser and Husk.

XX. January.

Comparison of Methods for Disinfecting Swimming Pools. W. A. Manheimer.
Studies of the Beta-hemolytic Streptococcus. W. G. Smillie
A Small Contact Epidemic of Typhoid Fever. M. F. Boyd.
The Etiology of Acute Epidemic Poliomyelitis. George Mathers.

Journal of Laboratory and Clinical Medicine, St. Louis.

II. December.

The Detection of Semen. V. C. Vaughan.
Trypsin Broth—An Ideal Medium for Making Blood Cultures. A Preliminary Report. R. G. Owen, F. A. Martin, and W. G. Pitts.
A Standard Method for Making Uniform Colloidal Gold Solution. W. K. Trimble.
The Preservation of Erythrocytes for the Wassermann Reaction. S. P. Reinmann.
A Simplified Complement-Fixation Test. N. E. Williamson.
A Modification of Gerhardt's Test for Diacetic Acid in Urine. H. P. Barret.
Prevention of Frothing in Aëration Methods. A. B. Dennison.
The First Year of the Michigan Tuberculosis Survey. V. C. Vaughan. Editorial.
The Choice of Ruling in a Blood Counting Chamber. R. S. Morris. Editorial.
Vitalism and the New Physiology. J. J. R. Macleod. Editorial.
Spirochetes in Healed Syphilis. P. G. Woolley.

Journal of Outdoor Life, New York.

XIV. January.

Community Control of Tuberculosis. Haven Emerson.
On the Just and Unjust Alike. Arnold Mulder.
Another Step in the Anti-Tuberculosis Campaign L. G. Vogel.
The Open Air School of the Sanatorium. Hester Pherson.
What Do You Owe to the Anti-Tuberculosis Movement. J. W. Flinn.
Health Campaigns in Pekin and Tientsin. W. W. Peter.

Industrial Management, New York.

LII. January.

Intolerable Burden and Cost of Needless and Senseless Labor Strikes.
The New Profession of Handling Men. Meyer Bloomfield.
Choosing Employees by Test. W. F. Kemble.
Measuring the Workman's Physical Fitness for His Job. M. W. Alexander.
Working Explosively: A Protest against Mechanistic Efficiency. W. H. Smythe.
Working Efficiently: An Argument for the Introduction of Efficient Methods. "By an Efficiency Expert."
The Taylor System in the Franklin Shops. G. D. Babcock.

Medical Times, New York.

XLV. January.

Medicine in Special Relation to Therapeutics in 1916. R. W. Wilcox.
Dermatology and Syphilis in 1916. W. J. Heinmann and Max Sheer.
A Review of the Alcoholic Problem in 1916. T. D. Crothers.

Medical Record, New York.

91. January 6.

Is There Any Relation Between Tuberculosis, Mental Disease and Mental Deficiency. S. A. Knopf.
New Research Work relating to the Alcoholic Question. T. D. Crothers.

January 13.

The Cancer Problem and the World War. W. S. Brainbridge.
Activation of the Organism of Poliomyelitis upon Solid Media, and a Consideration of Its Behavior Under Varying Conditions. Horace Greeley.

January 20.

Explosives—Industry Poisons. W. G. Hudson.
Cost of Treating Pulmonary Tuberculosis, with Especial Reference to Wage Earners and Communities. J. F. Russell.

Modern Hospital, St. Louis.

VIII. January.

A Complete Suburban Hospital—The Muhlenberg. F. J. Hubbard.
Successful Medical Treatment in Chronic Alcoholism. C. B. Townes.
Some Facts and Fallacies of Sterilization. A. W. Clark.
U. S. Naval Hospital of the Island of Guam. L. W. Johnson.
The Cost of Operating a Motor Ambulance. W. Fawcett.
The Story of a New England County Hospital. J. M. French.
The Small Community Hospital—The Equipment (Paper VI). J. A. Hornsby.

New York Medical Journal.

CV. January 6.

Pathology of Poliomyelitis and Its Relation to the Virus. G. E. Price.

January 13.

Physical Examination of Prisoners on Admission to Prison. F. L. Heacox.
Food and Efficiency. Practical Dietetics (Concluded). Martha Tracy.

January 20.

Medico-Educational Problems in the Treatment of Atypical Children. C. Hudson-Makuen.
Fatal Streptococcemia in an Epileptic. H. A. Knox.

New York State Journal of Medicine, New York.

17. January.

The Proper and Efficient Disinfection of a House. G. W. Goler.
Welfare Work of the Metropolitan Life Insurance Company for Their Employees. Lee K. Frankel.

New Orleans Medical and Surgical Journal.

69. January.

Bacterial Cultures of Human Spleens. A. W. Sellards.
Etiology of Rocky Mountain Spotted Fever. S. B. Wolbach.

Proceedings of the Conference of State and Provinicial Board of Health of North America 1916.

Secretary, Dr. E. R. Kelley, Mass. State Health Department, Boston.

Committee Reports:
- Conservation of Vision. G. T. Swartz, Chmn.
- Pellagra. J. A. Hayne, Chmn.
- Relation of Federal and State Authorities in Sanitary Regulation of Common Carriers. E. R. Kelly, Chmn.
- Model State, District, and County Health Laws. J. H. Sumner, Chmn.
- Course of Study in Sanitation for Women's Clubs. S. J. Crumbine, Chmn.
- Recent Advances in Sanitary Laws, Organization, and Practices. J. L. Burkhart, Chmn.
- Postal Aid to State Health Work. J. S. Fulton, Chmn.

Addresses and Discussions.
- Fundamental Distinctions Between Federal and State Health Policies. Oscar Dowling.
- Fundamental Distinctions Between State and Local, County, and City Health Policies. J. N. Hurty.
- Extent and Method of State Control in County Health Work. W. S. Rankin.
- Salvarsan as a Public Health Agency. A. J. McLaughlin.

Symposium on Control of Communicable Diseases:
- Best Method of Disinfection after Tuberculosis, Whooping-Cough, Typhoid Fever, Scarlet Fever, Measles, Diphtheria, and Smallpox. A. J. Chesley.
- Minimum Quarantine and Degree of Isolation in Measles, Whooping-cough, Diphtheria, Scarlet Fever, Smallpox, and Mumps. C. F. Dalton.
- What Can Be Done Through the Schools in the Prevention of the Communicable Diseases. L. R. Williams.
- Difference in Method of Control of Communicable Diseases in Urban and Rural Communities. J. S. Fulton.

President's Address: Some Remarks on the Present Status of Public Health Work. E. G. Williams.

Public Health Nurse Quarterly, Baltimore.

IX. January.

Organized Neighborhood Nursing. I. Blanche Swainhardt.
Organized Neighborhood Nursing. II. Isabel W. Lowman.
The Inter-Dependence of the Nurse and the Social Worker. Margaret F. Byington.
The Limitations of Public Health Nursing. Edna L. Foley.
Summary of Educational Requirements in Nursing Associations and State Laws. Helen L. Redfern.
A Series of Lectures on Public Health, for Student Nurses. Cecilia A. Evans.
Infantile Paralysis. Elizabeth Gregg.
A Series of Talks on Public Health Nursing. Mary Beard.
The Public Health Nurse and Child Labor. Helen C. Dwight.
The Visiting Nurse in Industrial Welfare Work. Florence S. Wright.
An Ideal Made Real in Toledo. Olive A. Colton.
Giving a Vision. Lucy M. Bushey.
A Survey of Knott County Schools, Kentucky. Rose M. Ehrenfeld.

Social Hygiene, Baltimore.

III. January.

The Bureau of Social Hygiene. J. D. Greene.
Clinics for Venereal Diseases. Why We Need Them; How to Develop Them. W. F. Snow.
A Health Exhibit for Men. F. J. Osborne.
The Matter and Method of Social Hygiene Legislation. T. N. Pfeiffer.
Prostitution and Alcohol. Walter Clarke.
Social Hygiene Activities of the Maine Medical Association. F. N. Whittier.
Treatment of Venereal Disease in the General Hospitals of New York State Outside of New York City. J. J. Weber.
The Venereal Peril. I. W. Brewer.

Survey, New York.

XXXVII. January 6.

Shorter Work Day. Dorothy K. Brown.
Women as Munition Makers. Amy Herves.
The Medical Renaissance in China. Wu Tien Teh.
Begging Bread for Poland.

January 13.

Turning Off the Spigot. I. What Makes Men Stop Drinking? Elizabeth Tillon.

When Wise Men Disagree. J. R. Commons.
In the Service of the State. J. H. Finley.
Children vs. A Great Machine. Eleanor H. Johnson.
A Mental Examination in Open Court. June E. Downey.

January 20.

The New Public Health. II. The Program of a State Board of Health. Alice Hamilton and Gertrude Seymour.

Southern Medical Journal, Birmingham.

X. January.

The Utilization of the Dispensary in Medical Teaching. W. S. Elkin.
The Infectiousness of Tuberculosis. T. D. Coleman.
Report of Committee on Uniform Laws for Southern States. O. M. Dowling.
A Statistical Study of Intestinal Helminthiasis. D. G. Willets.
School Inspection by County Health Officer and How to Secure a Correction for Defects. D. E. Sevier.

Texas State Journal of Medicine, Ft. Worth.

XII. January.

The Fumigation of Ships. R. L. Wilson.
Defects in Sight and Hearing that Retard Mental Development. E. R. Cary.
The Physician's Duties and His Relation to the Community. J. B. McKnight.
Publicity in Public Health Work. W. J. Thomson.

United States Public Health Reports, Washington, D. C.

XXXII. January 5.

The New U. S. Life Tables. Their Purpose and What They Show. J. W. Glover.

January 12.

Public Health Administration in St. Paul, Minn. I. G. B. Young.

January 19.

Public Health Administration in St. Paul, Minn. II. G. B. Young.

GREAT BRITAIN.

Journal of the Royal Sanitary Institute, London.

XXXVII. December.

Prize Essay on Maternity and Child Welfare, 1916. Isabel Macdonald and Kate C. Atherton.
Maternity and Child Welfare. Harold Kerr.
A National Scheme of Physical Education. R. T. McKensie.
A New Type of Trickling Filter. G. G. Nasmith.

Journal of State Medicine, London.

XXIV. December.

The Harben Lectures, 1916, by Alex. Cruikshank Houston. II. River Thames. 1. Its Relation to Pathogenic Bacteria; 2. Its Resistance to Filtration, and the Microscopic Appearances of the Suspended Matters; 3. Vitability of Pathogenic Bacteria under Conditions of Storage; 4. Chemical and Bacteriological Changes and Conditions of Storage.
The Control of Rat Plague. W. Wright.

Medical Officer, London.

XIV. December 23.

Proposed Municipalisation of Milk Supply.
Etiological Hypotheses Regarding Typhoid Fever. W. H. Hamer.

December 30.

Etiological Hypotheses Regarding Typhoid Fever (concluded). W. H. Hamer.

January 6.

Washing Facilities and Baths.
Causes of Invalidity.
Social Service Work in Hospitals and Clinics as an Aid to the Control of Syphilis and Gonorrhea. Norah March.

PUBLICATIONS RECEIVED.

The Prevention of Disease. By Kenelm Winslow, M. D., 1916. W. B. Saunders Co. Pp. 337. Cloth, $1.75 net.

Public Health Nursing. By Mary S. Gardner, R. N., 1916. The MacMillan Co. Pp. 364. Price, $1.75.

Personal Hygiene and Physical Training for Women. By Anna M. Galbraith, M. D., 1916. W. B. Saunders Co. Pp. 373. Cloth, $2.25 net.

Food Study. By Mabel Thacher Wellman, 1917. Little, Brown & Co. Pp. 312. Price, $1.50.

Housing Problems in America. Proceedings of the National Housing Association. V. 1916.

Proceedings of the Conference of State and Provincial Boards of Health of North America, 1916. E. R. Kelley, M. D., Boston, Mass., Sec.

Proceedings of the Tenth Annual Meeting of the Association of Life Insurance Presidents, 1916.

Annual Report of the Department of Health of the City of New York for the Year 1915.

19th Annual Report of the Bureau of Labor and Industrial Statistics of Virginia, 1916.

1915 Annual Report of the Industrial Commission of the Department of Labor of the State of New York.

Vol. VII. MARCH, 1917. No. 3.